

**DECISION NOTICE
AND
FINDING OF NO SIGNIFICANT IMPACT**

**Snow Fuels Reduction Project
and Non-Significant Forest Plan Amendment**

**Bend-Fort Rock Ranger District, Deschutes National Forest
Deschutes County, Oregon**

Legal: T. 18 S., R. 8 E., Sec. 31; T. 19 S., R. 8 E., Sec. 4, 5, 8, 9, 16, 21-23, 26-28, 33, 34; T. 20 S., R. 8 E., Sec. 1-4, 5, 9-12, 14-16, 20-23, 26-30, 33-35; and T. 23 S., R. 8 E., Sec. 4, 8, 9; Willamette Meridian, Deschutes County, Oregon.

Decision and Reasons for the Decision

Introduction

This Decision Notice documents my decision and rationale for the selection of Alternative 3, as described in the Environmental Assessment for the Snow Fuels Reduction Project. The Snow Fuels Reduction Project will implement fuels reduction and vegetation management in an area of high recreation use to improve visitor and firefighter safety, and to protect important forest values including riparian area function, adjacent spotted owl habitat and recreation facilities and will provide forest products.

The Snow Fuels Reduction Project area is located in the west portion of the Bend-Fort Rock Ranger District of the Deschutes National Forest, approximately 25 air miles west of Bend, Oregon. Proposed treatments are located mostly east of the Cascade Lakes Highway (Highway 46, also referred to as the Cascades Lakes Scenic Byway), from Elk Lake at the north to Crane Prairie at the south. The project is bordered by Late Successional Reserves (LSRs) and the West - South Bachelor Inventoried Roadless Area (IRA) on the east boundary, and the Three Sisters Wilderness on the west.

The project is located completely within the Northwest Forest Plan (NWFP) boundary and includes Matrix, Administratively Withdrawn areas, and Riparian Reserves. The project is also within the boundary of the East and West Deschutes County Community Wildfire Protection Plan.

The Snow Lakes (2006) and Cascade Lakes (1995) Watershed Analyses describe conditions in the watershed and the processes at work there (EA p. 25). The Environmental Assessment describes the purpose and need of the proposal (EA p.17-18). There is a need to provide for public and firefighter safety, protect wildlife habitat, riparian area function, and provide forest products consistent with management area goals and objectives.

Decision

Based on my review of the alternatives I have decided to authorize implementation of Alternative 3 and all connected actions and mitigations as described in this DN and in Chapter 2 of the Environmental Assessment. Approximately 6,099 acres will be treated according to the prescriptions

listed in Appendix A of this Decision Notice. An estimated 24.8 MMBF (49.0 CCF) of total fiber will be removed.

Alternative 3 will implement the actions described in the following table, separately or in combination. A list of each unit is included as Table A-2 in Appendix A of this Decision Notice (DN).

Table 1: Summary of Silviculture & Fuels Treatments

| Vegetation Type and Prescription (Rx) | Riparian Reserve Net Acres | Total Net Acres |
|--|-----------------------------------|------------------------|
| Lodgepole pine | | |
| • Intermediate Treatment | | |
| ○ Salvage and live ladder fuels reduction (Rx 1) | 296 | 355 |
| ○ Salvage and precommercial thin (Rx 2) | | 19 |
| ○ Low Thin (Rx 4 and 5) | 33 | 346 |
| ○ Variable Density Thin (Rx 13) | 13 | 2,187 |
| • Even-aged Regeneration Harvest Method | | |
| ○ Seed Tree (Rx 10) | | 392 |
| ○ Shelterwood (Rx 11) | | 204 |
| ○ Overstory Removal (Rx 12) | 8 | 1,389 |
| Mixed Conifer, Ponderosa pine, and Mountain Hemlock | | |
| • Intermediate Treatment | | |
| ○ Hazard reduction and ladder fuels reduction on steep slopes (Rx 3) | | 3 |
| ○ Variable Density Thin (Rx 6 and 7) | 1 | 899 |
| ○ Precommercial thin and mechanical shrub treatment (Rx 8) | | 305 |
| Total Acres | 351 | 6,099 |

Table 2: Proposed Slash Treatment - Net Acres

| Proposed Treatments | Acres |
|---|--------------|
| Salvage | 5,794 |
| Grapple/Hand Piling natural fuels | 445 |
| Hand Piling of natural fuels | 11 |
| Grapple Piling of natural fuels | 5,128 |
| Mechanical Shrub Treatment | 305 |
| Grapple Piling/Mechanical Shrub Treatment | 210 |

A variety of standard mitigation measures and best management practices are included to minimize or eliminate any adverse effects and to ensure consistency with the Forest Plan. The mitigation measures that apply to this project are listed in Appendix B of this DN.

Forest Plan Amendment

The Selected Alternative includes a site-specific non-significant amendment to the Deschutes Forest Plan. The amendment is a relocation of an Old Growth Management Area to a location that would better provide for the habitat needs of the target species. This amendment will also allow salvage and fuels treatments within the current old growth area thus improving the fuels strategy for the project. Currently the Old Growth area is 395 acres and the replacement Old Growth Area would be 403 acres

(refer to Map 4 and Map 5 Appendix C of this DN).

The proposed change would affect the balance of Scenic Views and General Forest Management Areas. The replacement Old Growth area is currently General Forest (336 acres) and Scenic, Partial Retention Foreground (67 acres). The existing Old Growth Area would be reclassified as Scenic Partial Retention Foreground (205 acres) and General Forest (189 acres). There would be a loss of 147 acres from General Forest (refer to Map 4 and Map 5 Appendix C). Outputs as predicted in the Forest Plan would not change because timber harvest is programmed in Scenic Views. Both areas are within the Crane Prairie Key Elk area.

Within the Northwest Forest Plan, Old Growth Areas from the Deschutes National Forest Plan are considered Administratively Withdrawn. The Northwest Forest Plan allocation will follow the change of Old Growth Area, increasing the amount of Administratively Withdrawn by eight acres (from 395 acres to 403 acres) with a corresponding loss of eight acres from Matrix (refer to Map 6 and Map 7 Appendix C). Riparian Reserves along the east and west edges for both Deschutes River and Snow Creek will not change with the amendment.

Connected Actions

Danger Tree Removal: Federal and State of Oregon safety regulations require that danger trees along project area travel routes be felled prior to activities taking place. Roadside danger trees will be felled along these travel routes and where activity units border the road system and may be removed where permitted.

Road Reconstruction: Road reconstruction activities will occur on 3.66 miles of the 4270 road, from mile post 7.64 to mile post 11.3. The reconstructions will include the restoration of drainage features, slope stabilization, guardrail replacement, applying spot surfacing, a multi-layer bituminous surface treatment, or resurfaced with crushed aggregate prior to hauling products from commercial harvest activities.

Road Maintenance: In addition to road reconstruction work, other roads that will be used for timber haul will require maintenance, primarily blading and shaping of the roadbed and brush removal. All activities will remain within the road prism and all affected areas will be restored upon project completion.

Road 4600542 accesses Units 29, 29.1, 311, 311.1, and 318. Road 4600542 will require more extensive maintenance using engineering methods to protect natural resources. A temporary improvement of the existing crossing, over an intermittent seep is needed for access. During high water table conditions in the early summer, this seep exhibits surface water that drains to a wetland. By late summer no surface water is evident and soil conditions are dry. The temporary improvement will occur over an area approximately 25 feet wide during late summer when soil moisture is reduced. Geotextile cloth with temporary fill material will be used within the crossing, and will be removed after salvage operations are completed and before soil conditions gain moisture.

Temporary Road Development: Commercial harvest operations are expected to require the use of approximately 10.5 miles of temporary roads (roads built to facilitate ground-based harvest systems for the singular purpose of removing forest products from a treated stand). These roads will usually be short, averaging less than 0.2 miles, ranging from less than 0.1 mile to less than 1.0 mile. Temporary roads will be built to low specifications that will allow equipment to access landing sites. These roads

will be built on slopes less than 10 percent and will be constructed to the lowest possible standard capable of supporting log haul in order to minimize ground disturbance. Where possible temporary roads will be used to access multiple units. Following project activities, temporary roads will be rehabilitated through subsoiling. No temporary roads or landings are planned within Riparian Reserves.

Where previous logging activities have occurred, the existing road prism will be used, necessitating the removal of down, dead trees and tree seedlings/saplings and shrubs that have established since the roads were closed. Following treatments, these roads will again be rehabilitated.

Rationale

I have chosen Alternative 3 because it addresses the purpose and need and key issues in a manner that will prevent unwanted adverse affects. When compared to the other alternatives, Alternative 3 provides a better overall combination of resource protection and benefits. This alternative is similar to Alternative 2 in altering the risk of high intensity fire burning in the area, however Alternative 3 addresses the issue of spotting from the west and igniting heavy fuel accumulations, moves more stands toward desired conditions to meet management objectives and increases protection for developed and dispersed recreation sites, including the resorts at Lava Lake and Crane Prairie.

I am confident that the resource protection measures developed for this alternative will prevent unwanted adverse effects, ensure compliance with the many standards and regulations, and address site-specific situations where extra care is called for.

My conclusion is based on a review of the project record, which shows the analysis of effects was based on relevant scientific information (EA Chapter 3) and a consideration of literature brought up in scoping and comments (EA pp 359-364).

In making my decision, I considered the comments that were submitted by members of the public and other agencies. When the EA was made available for a 30-day comment period on March 19, 2008, we already had engaged with citizens and other agencies who were interested in the plans we had for the Snow project area (EA pp. 18-19). Several people expressed support for the fuels reduction, while others were concerned that the treatments were excessive to meet the need.

Alternative 3 addresses the Purpose and Need in the following ways:

Providing for better public and firefighter safety. The proposed action and Alternative 3 were developed using knowledge of existing fuels conditions and scientific concepts for optimizing fuels treatment location (EA pp. 80-84). Alternative 3 does more on the landscape than Alternative 2, by increasing treatments on the west boundary of the area and upwind of recreation sites and developed areas. Forest fuels will become substantially more discontinuous thus lessening the intensity and resistance to control of wildfire. Landscape fuel patterns include areas with low-hazard fuels that are strategically placed. Safe travel corridors will be provided for the public and wildland firefighter access during a wildfire event. The West - South Bachelor Inventoried roadless area adjacent to the project area would continue to have limited protection of fire coming from the west or northwest due to proximity to wilderness and management limitations in both of these areas.

EA Table 30, p. 93-95 provides a display of expected outcomes of project activities. It clearly describes that Alternative 3 provides the greatest benefit with the reduction of hazardous fuels. Not only would wildfire intensity be reduced, but wildfire suppression activities would be more effective, firefighter and public safety would be improved, and resource values would be substantially protected.

Protecting wildlife habitat and other forest values. Firefighters will be able to more effectively manage wildfires, with an emphasis on protecting eagle and osprey habitat, Sheridan and Browns Late Successional Reserves, Riparian Reserves and recreation sites. Important connections can be better protected, such as between Late Successional Reserves and Critical Habitat Units for the northern spotted owl.

Alternative 3 benefits wildlife by addressing recommendations within the Bald Eagle Management Plans. This deals with the reduction of wildfire risk and promotion of tree species that can become future nest trees (EA pp. 162-163).

The Sheridan and Browns Mountain Late Successional Reserves (LSRs) are located east of and adjacent to the project area, in the path of prevailing winds. The Late Successional Reserves (Sheridan Mt. LSR and the Brown's Mt. LSR) will be at less risk from a wildfire that is burning within project treatment areas or west of the project area. The treated areas will have reduced fuel loading that will allow an improved opportunity for control and less opportunity for wildfire to move into LSRs and remove large tree habitat under most conditions.

Moving the Old Growth management area will better serve the desired old growth management species found in lodgepole pine which include the marten and the black-backed woodpecker.

Reducing fuel loads within Riparian Reserves will ultimately benefit elk by helping to protect it from a stand replacing event (EA pp. 191).

Firefighters will be able to more effectively manage wildfires around recreation facilities and improvements within the planning area. Treatments will reduce wildfire intensity and will provide safety corridors and defensible space. Treatments will occur adjacent to 23 miles of open public roads (Table 27, EA p. 92) to reduce stand density and hazardous fuels. These roads will provide access routes for the public to safely leave an area in the event of an approaching wildfire. More developed recreation sites have reduced fuels upwind of probable fire travel which will help reduce impacts to sites and increase safety of visitors. Resorts where treatments will occur are at Lava Lake and Crane Prairie. Campgrounds where adjacent fuels will be treated include Lava Lake, Hosmer Lake, Deschutes Bridge, Cow Camp and Crane Prairie.

Protecting Riparian Reserves. The heavy fuels conditions will be reduced in the lodgepole-dominated upland vegetation in Riparian Reserves adjacent to riparian vegetation. Alternative 3 treats 32% of the Riparian Reserves of the Deschutes River and Snow Creek. An additional 60 acres of Riparian Reserve treated will be adjacent to wetlands and the intermittent stream that drains into Elk Lake. The potential for severe fire effects (hydrophobic soils, decreased ground cover, severely burned soils) is decreased under Alternative 3 over the other alternatives because more acres will be treated to remove fuels. In the event of a wildfire, the stability and integrity of water temperature, stream channel, and long-term large woody recruitment will likely be maintained in those areas of treatment. In case of a fire this will decrease the potential for changes in the peak/base flows or water yield as a result of high severity stand replacing wildfires (EA pp 293-295). The continuity of fuels through the riparian reserves will be interrupted thus reducing the amount of area within the riparian reserves at risk to high soil heating.

Providing forest products, consistent with LRMP goals and objectives. Removal of forest fuels will provide timber and wood fiber products to local and regional economies. Commercial harvest will offset the cost of the unprofitable, but necessary, work of removing smaller trees and down, dead wood fiber. Harvest of merchantable logs will reduce the cost of implementing the project by providing revenues produced by selling the material. Additional jobs and income will be provided for the local

and regional economy (EA pp. 352-353).

Alternative 3 is responsive to the key issues in the following ways:

Key Issue #1: The Proposed Action (Alternative 2) could further address fuels and Forest Plan objectives for management of lodgepole pine.

Key Issue #1 is addressed in Alternative 3 with live tree treatments. The live tree treatments provide for managing stands to meet visual, intensive recreation, general forest and matrix objectives in lodgepole pine. Salvage of utilizable dead lodgepole pine will occur on approximately 366 additional acres than that proposed in Alternative 2 (EA pp. 131-132). Management objectives addressed by Alternative 3 and not Alternative 2 include the following:

1. A forest health objective of preventing forest pest problems, specifically dwarf mistletoe spreading from lodgepole pine overstory to understory trees and mountain pine beetle causing additional mortality in lodgepole pine.
2. A Matrix objective of increasing ecological diversity by providing early successional habitat.
3. A General Forest objective of regenerating stands no longer capable of optimum growth.
4. A Scenic Views objective of managing healthy, full crowned, young trees rather than older lodgepole pine with relatively small crowns and deteriorating appearance.
5. An Intensive recreation objective of managing lodgepole pine to provide a mosaic of even-aged stands with natural-appearing openings of varying sizes.

Key Issue #2: The Proposed Action (Alternative 2) landscape fuels strategy was designed to limit the potential for spotting from the west into heavy fuels accumulations. Strategic areas with heavy fuels accumulations remain within spotting distance of a fire burning to the west. Specific areas include north of the confluence of Snow Creek and Deschutes River and west of the Inventoried Roadless Area.

This issue is addressed through a non-significant Forest Plan amendment that will relocate the present Old Growth Management Area (OGMA) (394 acres) to another location within the Snow project area (EA pp. 45-52). This OGMA is strategically located and treatment to reduce hazardous fuels is important in the overall effectiveness of this project, enhancing the effectiveness of fuels treatments on the landscape (compare figures 17 and 18 in the EA). Through the removal of much of the hazardous fuel buildup, this area will be able to effectively intercept embers from west and northwest without becoming a high intensity wildfire.

Alternative 3 has more than 10 miles of treatments north and south which will intercept embers within 1/2 mile of the western boundary. This mileage compares with no areas meeting the criteria for Alternative 1 and is at least 30% better than Alternative 2 (EA pp. 92). Fire fighters will be able to more safely, efficiently, and effectively fight wildfire. This will also reduce the Riparian Reserve area where high severity fire could affect aquatic and soil function (EA pp 293-294).

As a secondary reason to address the condition of the present OGMA, it is not meeting the desired condition to meeting the needs of the focal wildlife species. The location of the new OGMA (403 acres) is established with larger and more widespread live trees and provides better wildlife habitat for those focal species associated with this area, black-backed and three-toed woodpeckers and the western pine marten. While the beetles were active in the area, the lodgepole pine provided woodpecker foraging habitat. The beetles have mostly moved on and most of the dead trees have fallen, no longer providing desirable foraging or nesting habitat for woodpecker populations (EA pp. 198-211). The

remaining canopy is greatly diminished and no longer provides habitat for the pine marten (EA pp. 191-195).

Other Alternatives Considered

In addition to Alternative 3, Alternative 1 (No Action) and Alternative 2 (Proposed Action) were developed and analyzed, but not selected (EA Chapter 2 – Alternatives- pp. 34-45 and EA Chapter 3 – Affected Environment and Environmental Consequences – pp. 74-356). Three other alternatives were also considered but were eliminated from further analysis (EA pp. 70-71).

Alternative 1 (No Action): I did not select this alternative because it does not meet the purpose and need for action. The potential for high or extreme wildfire behavior would remain. The risk of embers from other nearby wildfires landing in and starting fires that could quickly become high intensity would remain high. Existing high-density stands would continue to provide an elevated risk of high intensity, stand replacement crown fire. Beetle infestations would continue to kill trees, adding to the already heavy fuels buildup and high fire risk.

Based on analysis there would continue to be the risk of substantial loss to the wildlife and fisheries resources. Late Successional Reserves for spotted owls (EA p. 147), Key Elk habitat, and redband trout habitat (EA PP 287-289) would remain at high risk to loss from wildfire. Even though wildfire would likely provide an increase in forage habitat for specific wildlife species, this habitat is generally for the short term and at the expense of other species that rely on older, more structured forests. Riparian areas, particularly those areas along the Deschutes River and Snow Creek, would remain substantially vulnerable to loss of vegetation and the decrease of water quality and streambank integrity from high severity and intensity wildfire, compromising redband trout habitat.

This alternative would not reduce the fire risk or improve visitor safety within this high summer and fall recreational use area. Visitors to this part of the Forest, for both dispersed and developed recreation, would continue to be at risk from high intensity wildfire. Areas that are safe for travel would remain limited. Developed areas would also remain more at risk to loss from wildfire without the reduction of fuels in nearby areas of heavy fuels or high stand density or both.

Alternative 2 (Proposed Action): Although the proposed action offers a reasonable effort to reduce fuels in the area, it is not proactive to the desired goals and objectives within the area. I did not select this alternative because: Alternative 2 does not include the relocation of the Old Growth MA, which would remain a large area of heavy down fuels adjacent to high risk areas on the west side of the planning area and susceptible to long range spotting. The salvage-only treatment does not meet the desired condition for Scenic Views and Intensive Recreation (EA, Appendix A, Table 91). Stands within the lodgepole pine vegetation type will be at a higher risk for beetle mortality more quickly than with Alternative 3. There would be an increase in multi story lodgepole pine stands which spread mistletoe. Alternative 2 treats less riparian reserve. Also, this alternative would not produce as much fiber for the local economy as Alternative 3. This alternative, which would limit treatments to salvage and removal of trees less than four inches in many lodgepole pine stands, would not reduce the frequency of future activities and their associated impacts, especially to the soils resource.

Public Involvement

Scoping for the project included phone calls, scoping letter, article in the Bend Bulletin and field visits with governmental and organization personnel.

The Snow project first appeared in the Schedule of Projects for the Deschutes and Ochoco National Forests and Prineville District of the BLM on April 1, 2007. The Warm Springs, Burns Paiute, and Klamath Tribes were initially contacted by phone to inform them of the project and then were sent copies of the scoping letter.

A letter describing the project, dated March 23, 2007, was mailed to 325 individuals, organizations, agencies and the Tribes. The Letter described the purpose and need as well as three Forest Service internal issues which included: 1) Leaving green overstory lodgepole pine in salvage only units; 2) the Old Growth area between Snow Creek and Deschutes River which is a fuel hazard, and 3) the low economic efficiency with salvage only prescriptions. The scoping letter also noted that a Forest Plan Amendment would be required to re-designate the Old Growth MA. The letter was followed by an article in *The Bulletin* newspaper on March 29, 2007.

Four field trips were conducted. The first field trip was with Tim Lillebo of Oregon Wild on May 14, 2007. A second field trip on June 20, 2007 was with USFWS personnel Jim Thrailkill and Jennifer O'Reilly, Glen Ardt of ODFW and Forest Service personnel Kim Mellen-McLean, Elaine Rybak and Lauri Turner (Wildlife specialists). The third field trip occurred on August 20, 2007 with Marilyn Miller and Fred Tanis of the Sierra Club. The last field trip was October 24, 2007 with Asante Riverwind, Marilyn Miller and Fred Tanis of the Sierra Club.

The Forest Service received seven phone calls asking for more information or giving opinions of the project. All of the phone calls were in support of the project. Eleven letters and e-mails were also received in response to scoping.

While all commenters were supportive of fuels reduction, the scoping results revealed some clear differences of opinion among members of the public. Some are concerned that the Forest Service is not doing enough to manage the fuels and utilize timber volume; while others expressly object to going beyond removing only the smallest trees, and oppose entering riparian and unroaded areas or Old Growth Management Areas. The treatments do not enter riparian area vegetation with buffers planned to keep activities away from water and wetland vegetation (EA pp.32-33). Alternative 2 analyzes maintaining the OGMA as it is.

Many of the comments were requests to see impacts from the activities analyzed and displayed in the EA. Many comments, especially from people who viewed the area on a tour, were favorable towards reducing fuels in the Riparian Reserves so fire would not so severely impact wetland vegetation and also for moving the Old Growth MA to an area that could more effectively meet wildlife needs. Some comments were positive towards providing wood fiber for local area producers (including firewood cutters, house logs, and fiber for fuels and bedding). Similarly, commenters did not favor salvage only in lodgepole pine and felt that following full stand treatments, the stands would look and function better.

The EA was made available for a 30-day public comment period March 19, 2008. A cover letter summarizing the project was sent to Tribes, approximately 310 individuals, businesses, and organizations that expressed an interest in the project. Another 13 individuals, governmental organizations, or groups received the EA. The EA was also placed on the Deschutes and Ochoco National Forests website. Comments were received from 11 respondents. The IDT team and I

carefully considered all of the comments submitted. Comments were used to clarify and improve some portions of the EA. The summary of the comments and the response to those comments is located in Appendix F of the EA.

Finding of No Significant Impact

Sufficient information has been disclosed in the analysis to make a reasoned choice among alternatives and no significant impacts on the quality of the human environment have been identified. Information available from past actions of similar context and intensity in this area also indicates that no significant impacts would be anticipated.

Based on the site-specific environmental analysis documented in the Snow Fuels Reduction Project EA, I have determined that this project will not significantly affect the quality of the human environment; therefore, an Environmental Impact Statement is not needed. An analysis of the cumulative effects of the planned resource activities indicated that the combined effects are environmentally acceptable for soil, water and all renewable forest resources. Based on the analysis, I expect only short duration adverse impacts and long-term favorable impacts from implementation of Alternative 3. All adverse impacts are limited in scope and intensity and can be considered minor. This determination is based on the mitigation measures (EA pages 56-64) designed into the selected alternative and the following factors:

- (1) My finding of no significant environmental effects is not biased by the beneficial effects of the action. The beneficial and adverse impacts are disclosed in the EA and no significant effects on the human environment have been identified (EA pages 73-358).
- (2) There will be no significant adverse effects on public health and safety (EA page 348-358). State regulations provide the guidance for air quality. Smoke management will minimize the flow of smoke, and associated particulate matter (PM-10), from pile burning to avoid high density human habitation or other sensitive areas of use to not significantly affect human health (EA Chapter 2, Mitigation Measures, pages 57 and 58). This project will improve egress during wildfires for both the public and for wildland firefighters with the reduction of stand density and fuels adjacent to identified defensible space adjacent to Forest roadways (EA pp. 89, 94-96). Hazard trees are to be felled in accordance with regulations.
- (3) There will be no significant effects on unique characteristics or ecologically critical areas. There are no Wild and Scenic Rivers, parklands, prime farm or forestlands within the project area. The project area is primarily divided between General Forest, Intensive Recreation, and Scenic Views management allocations, and the selected alternative does not impede the recreational use that is already established in the area (see EA pp.312-315). This alternative manages areas with NWFP; Administratively Withdrawn, Matrix and Riparian Reserve direction.
- (4) Based on the input from forest resource specialists and from members of the public, I do not expect the effects on the quality of the human environment to be highly controversial in a scientific context. The effects of implementation of this decision do not rise to the level of scientific controversy as defined by the Council of Environmental Quality (EA pages 73-364).

- (5) We have considerable experience with the types of activities to be implemented. Fuels reduction and forest thinning projects are not unusual on the Forest. The effects analysis shows the effects are not uncertain, and do not involve unique or unknown risk (EA pages 73-364).
- (6) The action is not likely to establish a precedent for future actions with significant effects, because any future management within the project area would be evaluated to determine significance; future projects would require site-specific analysis and decisions.
- (7) The cumulative impacts are not significant. As an example the hydrologic cumulative effects are less than one and a half percent of the watershed and will therefore not change water timing, duration and water yield (EA pp. 300). Discussions on the cumulative effects on resources such as wildlife (As example EA pp. 148-150, 154, 163, 169, 174-175, 177), botany (EA pp. 321-322), fisheries and hydrology (EA pp. 298-300) and soils (EA pp 265-267) are included in the EA Chapter 3.
- (8) The action will have no significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. Based on the pre-disturbance survey and record search of the project area, a finding of "no historic properties affected" has been made (EA pages 348-350). Mitigations (EA page 64-65, Cultural Resources) provide guidance for protection of known and discovered sites. Avoidance of these areas will provide protection to the fullest extent possible.
- (9) Biological Evaluations have been prepared in accordance with Forest Service Manual direction. The action will not adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. No spotted owl nesting, roosting, foraging habitat or Critical Habitat Units are affected and the amount of dispersal habitat degraded is limited to 1% of that available in the watershed (EA pages. 142-151). No significant impacts to other endangered, threatened, or sensitive species will occur (EA pages 141-170).
- (10) Applicable laws and regulations were considered in the EA. This decision is in compliance with relevant federal, state and local laws, regulations and requirements designed for the protection of the environment (EA pages 73-356 & 405-407). Effects from this action meet or exceed State water (EA page 358) and air quality standards (EA page 93).

Changes to the Land Management Plan that are Not Significant

The adjustments made with the Forest Plan Amendment in this decision are a matter of adjustments of management area boundaries and prescriptions which resulted from on-site analysis. These adjustments do not cause significant changes in the multiple-use goals and objectives. The Regional Interagency Executive Committee reviewed the plan amendment and granted approval January 15 2008. The Actions of the Forest Plan Amendment would not significantly alter the long-term relationship between levels of multiple-use goods and services originally projected in the Forest Plan. The changes in management area allocation is small and does not significantly alter the availability of goods and services. The actions of this Forest Plan Amendment do not have an important effect on the

land management plan nor does it affect land and resources on a large portion of the Deschutes National Forest.

Findings Required by Other Laws and Regulations

I find my decision to be consistent with the long-term goals, objectives and direction contained in the Deschutes National Forest Land and Resource Management Plan (LRMP) and with the requirements of the National Forest Management Act.

Alternative 3 proposed the use of final regeneration harvest methods which include seed tree and final removal harvests. There is assurance that lands harvested using these methods can be adequately restocked within five years of harvest (EA p. 130). These harvest methods would meet a variety of management objectives other than dollar return or the unit output of timber. These harvest systems would meet forest health, ecological diversity, optimum growth and scenic quality objectives (EA pp 131-133). Regeneration harvest size is met in Alternative 3 design. Culmination of mean annual increment has occurred in stands proposed for regeneration harvest.

This project has been determined to be consistent with the Deschutes Land and Resource Management Plan (EA table 91) as amended by the Northwest Forest Plan Record of Decision for the Aquatic Conservation Strategy (ROD, B-9) by meeting the nine objectives, as well as Riparian Reserve Standards and Guidelines found in the ROD, C-31.

I have reviewed the 1995 Cascade Lakes Watershed Analysis (WA), the 1997 Browns/Wickiup WA, and their update, the 2006 Snow Lakes WA, and used these documents to be informed on the ecological functions within the watershed. The Snow Lakes WA (p. 108) identified extensive areas of dead lodgepole and increased fuel loading. It recommended that areas of moderate to high mortality within the Matrix be considered high priority for vegetation treatments to reduce the risk of uncharacteristic wildfire and to provide protection to the public and watershed values. I have considered the analysis in the EA that describes in detail the fuel conditions within the project area's Riparian Reserves (EA pp. 284-293).

I reviewed the management activities from a project and watershed scale. The fuels and vegetation management authorized with this decision is necessary to meet project objectives and will also provide benefits to the Aquatic Conservation Strategy objectives (EA pp. 303-311). This project has no consequences to listed fish or water quality and it meets the Aquatic Conservation Strategy objectives. The following rationale supports my conclusions: The project design, management requirements, and mitigation measures are structured to minimize cumulative effects. The risk of large-scale disturbance in the watershed is reduced while increasing stand structural diversity and moving closer to conditions historically present on the landscape (EA pp. 101-112). Treatments within riparian reserves are consistent with the NWFP standards and guidelines and are designed to retain desirable habitat components (EA p. 303). The reduction of excessive fuel loadings outside of stream buffers will reduce the potential damage to the physical integrity of aquatic systems by wildfire (EA pp. 293-312). I am confident that the mitigation measures, project design features and Best Management Practices will protect beneficial uses of the streams in the project area in a manner consistent with the Aquatic Conservation Strategy and the Clean Water Act.

The EA considers effects that have the potential to disproportionately adversely affect minority or low-income populations. No high and adverse human health or environmental effects on minority and low-income populations from the Snow project were identified. The EA notes that employment opportunities may occur for minority and low-income workers.

I've concluded that my decision is consistent with the following laws:

National Environmental Policy Act: NEPA establishes the format and content requirements of environmental analysis and documentation. The entire process of preparing this environmental assessment was undertaken to comply with NEPA.

National Historic Preservation Act: A cultural resource inventory was completed for the project area. The Deschutes National Forest completed consultation with the Oregon State Historic Preservation Office (SHPO). The treatment units in the selected alternative have been designed to not affect any cultural resources.

Endangered Species Act: Biological evaluations have been prepared to document possible effects of activities on threatened or endangered species in the project area (Biological Evaluation and Assessment for Threatened, Endangered, Proposed, and Sensitive Wildlife Species for the Snow Proposed Action Area, Snow Vegetation and Fuels Management Project Biological Evaluation for Sensitive and other Rare or Uncommon Plant Species and Invasive Plant Species Assessment and Snow Project Fisheries BE.)

Clean Air Act: The selected alternative is designed to be consistent with the Clean Air Act and the State of Oregon. All burning is coordinated with the DEQ through the State of Oregon smoke management program. All burning authorized by this decision will be conducted in compliance with the State of Oregon Smoke Management System and meet smoke management objectives for total emissions.

Clean Water Act: the selected alternative meets the requirements of the Clean Water act protecting beneficial uses and maintaining water quality. Alternative 3 would maintain stream shading and would have no increase in overland flow degrading streams in the project area (EA page 300-301). Timing, duration and volume of peak flows would not be changed, water quality and ODEQ 303(d) parameters would be maintained. Fish habitat and populations would not be impacted (EA pages 298-302).

Wild and Scenic Rivers Act: The Deschutes River from Little Lava Lake to Crane Prairie is not included in the National Wild and Scenic River System but was identified as eligible for consideration in a 1990 determination study. The Deschutes River within the project area is classified as Recreational. This reach of the Deschutes River was designated a State Scenic Waterway in 1987. the area is managed visually as partial retention and retains the species composition.

Implementation Date

If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, 5 business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition.

Administrative Review or Appeal Opportunities

This decision is subject to appeal pursuant to 36 CFR 215. Only individuals or organizations that submitted comments or otherwise expressed interest during the 45-day comment period, which ran from March 19, 2008 to April 18, 2008, may appeal. Notices of appeal must meet the requirements of 36 CFR 215.14. Appeals can be submitted in several forms, but must be received by the Appeal Deciding Officer, Regional Forester, within 45 days from the date of publication of notice of the decision in *The Bulletin*, Bend, OR. Appeals may be:

1) Mailed to: *Appeal Deciding Officer, Pacific Northwest Region, USDA Forest Service, Attn. 1570 Appeals, PO Box 3623, Portland, OR 97208-3623;*

2) Emailed to: *appeals-pacificnorthwest-regional-office@fs.fed.us*. Please put APPEAL and the project name in the subject line. Electronic appeals must be submitted as part of an actual e-mail message, or as an attachment in Microsoft Word (.doc), rich text format (.rtf), or portable document format (.pdf) only. E-mails submitted to addresses other than the ones listed above or in formats other than those listed above or containing viruses will be rejected. It is the responsibility of the appellant to confirm receipt of appeals submitted by electronic mail. For electronically mailed appeals, the sender should normally receive an automated electronic acknowledgement from the agency as confirmation of receipt. If the sender does not receive an automated acknowledgement of the receipt of the appeal, it is the sender's responsibility to ensure timely receipt by other means;

3) Delivered to: *Pacific Northwest Regional Office, 333 S.W. First Avenue, Robert Duncan Plaza Building, Portland, Oregon 97204-3440* between 7:45 AM and 4:30 PM, Monday through Friday except legal holidays; or

4) Faxed to: *Regional Forester, Attn: 1570 APPEALS at (503) 808-2255.*

Contact

For additional information about this decision or the Forest Service appeal process, contact Pete Powers, Bend/Fort Rock Ranger District, 1230 NE Third, Bend, Oregon, 97701, (phone 541-383-4774, email peterpowers@fs.fed.us).

/s/ John Allen

John Allen
Forest Supervisor
Deschutes National Forest

August 1, 2008

Date

Appendix A

Details of the Decision and Resource Protection Measures

Table A-1. Selected Alternative Prescriptions (alternative 3)

| Prescription Label | Prescription | Treatment¹ | Alternative 3 Unit and Total Acreage |
|---------------------------|--|---|--|
| <i>Prescription 1</i> | Salvage and ladder fuels reduction in lodgepole pine plant associations. | 1) Remove utilizable dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 2) Cut live lodgepole pine less than 4" dbh in the lower canopy levels that pose a hazard of igniting trees in upper canopy levels that could cause long distance spotting. 3) Pile and burn slash. | 49,54,62,63,72,103,104, 106,110,111,118,128,129 132,133,143,144,160,204 301-303,306,311, 317, 318,320 (355 acres) |
| <i>Prescription 2</i> | Salvage and precommercial thin in lodgepole pine plant associations, where manageable understory is present. | 1) Remove utilizable dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 2) Cut live lodgepole pine less than 4" dbh excess to desired stocking levels, generally retaining no more than 302-436 trees per acre (tpa). Vary spacing to retain best tree. 3) Pile and burn slash. | 109, 112, 112.1, 146 (19 acres) |
| <i>Prescription 3</i> | Hazard and ladder fuel reduction on steep slope (>30 percent). | 1) Remove dead standing and down lodgepole pine and live lodgepole pine which could fall and make contact with the power lines. 2) Cut live lodgepole pine less than 4" dbh in the lower canopy levels that pose a hazard of igniting trees in the upper canopy levels 3) Hand pile and burn slash. | 2 (3 acres) |
| <i>Prescription 4</i> | Low thin (thin from below) within scenic views and key elk area. | 1) Remove utilizable dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 2) Cut live lodgepole pine less than 16" dbh, reducing stocking to the lower management zone appropriate for the site. Retain no more than 170 tpa. Vary spacing to retain best, most dominant tree 3) Pile and burn slash. | 113-115, 145.1,148-152, 153.1, 153.2, 154, 155, 158, 309, 309.1, 310, 310.1, 326, 327 (268 acres) |
| <i>Prescription 5</i> | Low thin (thin from below) in osprey and bald eagle management areas. | 1) Remove utilizable dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 2) Cut live lodgepole pine less than 16" dbh, reducing stocking to the lower management zone appropriate for the site. Retain no more than 170 tpa. Vary spacing to retain best, most dominant tree and reduce stocking around manageable ponderosa pine. 3) Pile and burn slash. | 159, 198-202, 310.2 (78 acres) |

¹ Summarized from EA, Appendix A

| Prescription Label | Prescription | Treatment¹ | Alternative 3 Unit and Total Acreage |
|---------------------------|--|---|---|
| <i>Prescription 6</i> | Variable density thin in mixed conifer and ponderosa plant associations. | 1) Remove utilizable dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 2) Vary thinning treatment depending on existing stand conditions. Remove lodgepole pine or immature white/grand fir (<100 years), in any canopy layer, within 25' of manageable ponderosa pine or Douglas fir. Thin remaining trees from below, reducing stocking to levels that are appropriate for the site. Acceptable to retain true fir aggregations at upper stocking level where middle to upper canopy layers are dominated by mature trees (>100 years). 3) Pile and burn slash | 8, 9, 31.1, 33.2, 36, 42, 56, 57, 61, 64, 64.1, 77, 79, 80, 90-92, 99-102, 203, 205 (891 acres) |
| <i>Prescription 7</i> | Variable density thin in mountain hemlock plant association. | 1) Remove utilizable dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 2) Vary thinning treatment depending on existing stand conditions. Remove lodgepole pine or immature white/grand fir (<100 years), in any canopy layer, within 25' of manageable western white pine or Douglas fir. Thin remaining trees from below, removing trees in the lower and middle canopy layers that provide ladders for fire to move into upper canopy layers. Retain stocking between upper and lower management zones. 3) Hand pile and burn slash | 1 (8 acres) |
| <i>Prescription 8</i> | Precommercial thin and mechanical shrub treatment (mow) in mixed conifer or ponderosa pine plant associations. | 1) Cut trees less than 4" dbh excess to desired levels, generally retaining no more than 200-260 tpa. Vary spacing to retain best tree. Generally favor ponderosa pine for retention, followed by Douglas fir, lodgepole pine, and true fir (in order of preference). 2) Mechanical shrub treatment throughout stand. | 76, 78, 96-98 (305 acres) |
| <i>Prescription 10</i> | Seed tree regeneration method in lodgepole pine plant associations. | 1) Retain 10.5% of gross area in untreated patches to provide moderate to larger size aggregates of green tree replacements. Outside of retention clumps: 2) Remove dead lodgepole pine firmwood, standing and down, excess to fuels, wildlife, and soils objectives 3) Cut all but about 17 lodgepole pine trees per acre, retained for seed production and dispersed green tree replacements. 4) Pile and burn slash. | 18-21, 40, 58, 59, 70, 71, 75, 81, 82, 84, 117, 135, 137, 139, 180, 181.1 (392 acres) |

| Prescription Label | Prescription | Treatment¹ | Alternative 3 Unit and Total Acreage |
|---------------------------|---|--|---|
| <i>Prescription 11</i> | Shelterwood regeneration method in lodgepole pine plant associations. | 1) Retain 10.5% of gross area in untreated patches to provide moderate to larger size aggregates of green tree replacements. Outside of retention clumps: 2) Remove dead lodgepole pine firmwood, standing and down, excess to fuels, wildlife, and soils objectives 3) Cut all but about 50 lodgepole pine trees per acre, retained for seed production, site amelioration, and dispersed green tree replacements. 4) Pile and burn slash. | 30, 31, 31.2, 31.3, 32, 33, 33.1, 34 (204 acres) |
| <i>Prescription 12</i> | Overstory removal regeneration method in lodgepole pine plant associations. | 1) Retain 10.5% of gross area in untreated patches to provide moderate to larger size aggregates of green tree replacements. Outside of retention clumps: 2) Remove dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 3) Remove lodgepole pine overstory excess to that needed to provide wildlife green tree replacement. This would generally retain 9-14 tpa. Retention level may be lower, depending on residual diameters, level of dwarf mistletoe, and live crown ratio. 4) Pile and burn slash. | 22,23,29,37-39,41,43,44, 53,65,87,88,93,105,107, 119.1,122-124,126.3, 127, 127.1,130,131,134, 134.1, 136,138,140, 140.1, 142, 161,172, 173, 174,176-178,181,182, 183, 300,300.3,304, 305.2-305.4,312, 13.1, 314,319,319.1,321,322, 325,328,329 (1,389 acres) |
| <i>Prescription 13</i> | Variable density thin lodgepole pine plant associations. | 1) Remove dead lodgepole pine firm wood, standing and down, excess to fuels, wildlife, and soils objectives. 2) Vary thinning treatment depending on existing stand conditions. Removal generally limited to lodgepole pine. Where density of upper canopy level is less than lower management zone, remove trees from upper canopy level to favor those in lower canopy levels. Acceptable to create small openings (<5 acres on <10% of treatment area) where lodgepole pine in middle to upper canopy levels have poor crowns, deteriorating appearance, or dwarf mistletoe infection. Thin remaining trees from below, reducing stocking to the lower management zone appropriate for site conditions. 3) Pile and burn slash. | 3-7,10-17,45,48,66,67, 69.1,74,83,85,86,89,108, 116,119,119.2, 120, 121, 125, 126,140.2,141,145, 156, 157,170,175,179, 184-197,206,207,305, 305.1, 305.8, 313 (2,187 acres) |

Table A-2 - Unit Summaries**“Silviculture Prescription” column corresponds to Table A-1**

| Alternative 3 Unit | Treatments | | | | Acres | | |
|-----------------------|------------|------------------------------|-----------------|--------------|-------|-----|---------------------|
| | Harvest | Silviculture Prescription | Post Harvest | Fuels | Gross | Net | Riparian Reserve |
| 1 | HTH | 7 | SPC | HAND | 8 | 8 | 1 |
| 2 | HAZ LFR | 3 | LFR | HAND | 3 | 3 | |
| 3 | HTH | 13 | SPC | GRAPPLE/HAND | 37 | 37 | 11 |
| 4 | HTH | 13 | SPC | GRAPPLE/HAND | 43 | 43 | 1 |
| 5 | HTH | 13 | SPC | GRAPPLE/HAND | 29 | 29 | 1 |
| 6 | HTH | 13 | SPC | GRAPPLE | 114 | 114 | |
| 7 | HTH | 13 | SPC | GRAPPLE | 27 | 27 | |
| 8 | HTH | 6 | SPC | GRAPPLE | 5 | 5 | |
| 9 | HTH | 6 | SPC | GRAPPLE | 2 | 2 | |
| 10 | HTH | 13 | SPC | GRAPPLE | 2 | 2 | |
| 11 | HTH | 13 | SPC | GRAPPLE | 63 | 63 | |
| 12 | HTH | 13 | SPC | GRAPPLE | 66 | 66 | |
| 13 | HTH | 13 | SPC | GRAPPLE | 30 | 30 | |
| 14 | HTH | 13 | SPC | GRAPPLE | 11 | 11 | |
| 15 | HTH | 13 | SPC | GRAPPLE | 34 | 34 | |
| 16 | HTH | 13 | SPC | GRAPPLE | 45 | 45 | |
| 17 | HTH | 13 | SPC | GRAPPLE | 66 | 66 | |
| 18 | HCR | 10 | WHIP FELL | GRAPPLE | 20 | 18 | |
| 19 | HCR | 10 | WHIP FELL | GRAPPLE | 3 | 3 | |
| 20 | HCR | 10 | WHIP FELL | GRAPPLE | 16 | 14 | |
| 21 | HCR | 10 | WHIP FELL | GRAPPLE | 19 | 17 | |
| 22 | HOR | 12 | SPC | GRAPPLE | 10 | 9 | |
| 23 | HOR | 12 | SPC | GRAPPLE | 6 | 5 | |
| 29 | HOR | 12 | SPC | GRAPPLE | 21 | 19 | |
| 30 | HSH | 11 | WHIP FELL | GRAPPLE | 19 | 17 | |
| 31 | HSH | 11 | WHIP FELL | GRAPPLE | 13 | 12 | |
| 31.1 | HTH | 6 | SPC | GRAPPLE | 11 | 11 | |
| 31.2 | HSH | 11 | WHIP FELL | GRAPPLE | 20 | 18 | |
| 31.3 | HSH | 11 | WHIP FELL | GRAPPLE | 11 | 10 | |
| 32 | HSH | 11 | WHIP FELL | GRAPPLE | 40 | 36 | |
| 33 | HSH | 11 | WHIP FELL | GRAPPLE | 45 | 40 | |
| 33.1 | HSH | 11 | WHIP FELL | GRAPPLE | 64 | 58 | |
| 33.2 | HTH | 6 | SPC | GRAPPLE | 42 | 42 | |
| 34 | HSH | 11 | WHIP FELL | GRAPPLE | 14 | 13 | |
| 36 | HTH | 6 | SPC | GRAPPLE | 24 | 24 | |
| 37 | HFR | 12 | SPC | GRAPPLE | 22 | 20 | |
| 38 | HOR | 12 | SPC | GRAPPLE | 12 | 11 | |
| 39 | HOR | 12 | SPC | GRAPPLE | 13 | 12 | |
| 40 | HCR | 10 | WHIP FELL | GRAPPLE | 6 | 5 | |
| 41 | HFR | 12 | SPC | GRAPPLE | 11 | 10 | |
| 42 | HTH | 6 | SPC | GRAPPLE | 5 | 5 | |
| 43 | HOR | 12 | SPC | GRAPPLE | 12 | 12 | |
| 44 | HOR | 12 | SPC | GRAPPLE | 58 | 52 | |
| 45 | HTH | 13 | SPC | GRAPPLE | 7 | 7 | |
| 48 | HTH | 13 | SPC | GRAPPLE | 21 | 21 | |
| 49 | HSV | 1 | LFR | GRAPPLE/HAND | 13 | 13 | 13 |
| 53 | HOR | 12 | SPC | GRAPPLE | 5 | 4 | |
| 54 | HSV | 1 | LFR | GRAPPLE/HAND | 9 | 9 | 9 |
| 56 | HTH | 6 | SPC | GRAPPLE | 30 | 30 | |
| 57 | HTH | 6 | SPC | GRAPPLE | 13 | 13 | |
| 58 | HCR | 10 | WHIP FELL | GRAPPLE | 26 | 23 | |
| 59 | HCR | 10 | WHIP FELL | GRAPPLE | 4 | 4 | |
| 61 | HTH | 6 | SPC | GRAPPLE | 5 | 5 | |

| Alternative 3 Unit | Treatments | | | | Acres | | |
|-----------------------|------------|------------------------------|-----------------|--------------|-------|-----|---------------------|
| | Harvest | Silviculture Prescription | Post Harvest | Fuels | Gross | Net | Riparian Reserve |
| 62 | HSV | 1 | LFR | GRAPPLE/HAND | 11 | 11 | 11 |
| 63 | HSV | 1 | LFR | GRAPPLE | 6 | 6 | |
| 64 | HTH | 6 | SPC | GRAPPLE | 3 | 3 | |
| 64.1 | HTH | 6 | SPC | GRAPPLE | 4 | 4 | |
| 65 | HOR | 12 | SPC | GRAPPLE | 6 | 5 | |
| 66 | HTH | 13 | SPC | GRAPPLE | 192 | 192 | |
| 67 | HTH | 13 | SPC | GRAPPLE | 2 | 2 | |
| 69.1 | HTH | 13 | SPC | GRAPPLE | 4 | 4 | |
| 70 | HCR | 10 | WHIP FELL | GRAPPLE | 27 | 24 | |
| 71 | HCR | 10 | WHIP FELL | GRAPPLE | 56 | 50 | |
| 72 | HSV | 1 | LFR | GRAPPLE/HAND | 8 | 8 | 8 |
| 74 | HTH | 13 | SPC | GRAPPLE | 13 | 13 | |
| 75 | HCR | 10 | WHIP FELL | GRAPPLE | 6 | 5 | |
| 76 | NONE | 8 | SPC | MOW | 173 | 173 | |
| 77 | HTH | 6 | SPC | GRAPPLE | 147 | 147 | |
| 78 | NONE | 8 | SPC | MOW | 96 | 96 | |
| 79 | HTH | 6 | SPC | GRAPPLE | 67 | 67 | |
| 80 | HTH | 6 | SPC | GRAPPLE | 4 | 4 | |
| 81 | HCR | 10 | WHIP FELL | GRAPPLE | 10 | 9 | |
| 82 | HCR | 10 | WHIP FELL | GRAPPLE | 27 | 24 | |
| 83 | HTH | 13 | SPC | GRAPPLE | 70 | 70 | |
| 84 | HCR | 10 | WHIP FELL | GRAPPLE | 60 | 54 | |
| 85 | HTH | 13 | SPC | GRAPPLE | 190 | 190 | |
| 86 | HTH | 13 | SPC | GRAPPLE | 6 | 6 | |
| 87 | HFR | 12 | SPC | GRAPPLE | 1 | 1 | |
| 88 | HFR | 12 | SPC | GRAPPLE | 2 | 2 | |
| 89 | HTH | 13 | SPC | GRAPPLE | 28 | 28 | |
| 90 | HTH | 6 | SPC | GRAPPLE | 82 | 82 | |
| 91 | HTH | 6 | SPC | GRAPPLE | 37 | 37 | |
| 92 | HTH | 6 | SPC | GRAPPLE | 103 | 103 | |
| 93 | HFR | 12 | SPC | GRAPPLE | 38 | 34 | |
| 96 | NONE | 8 | SPC | MOW | 13 | 13 | |
| 97 | NONE | 8 | SPC | MOW | 7 | 7 | |
| 98 | NONE | 8 | SPC | MOW | 16 | 16 | |
| 99 | HTH | 6 | SPC | GRAPPLE | 238 | 238 | |
| 100 | HTH | 6 | SPC | GRAPPLE | 8 | 8 | |
| 101 | HTH | 6 | SPC | GRAPPLE | 2 | 2 | |
| 102 | HTH | 6 | SPC | GRAPPLE | 7 | 7 | |
| 103 | HSV | 1 | LFR | GRAPPLE | 4 | 4 | |
| 104 | HSV | 1 | LFR | GRAPPLE/HAND | 11 | 11 | 11 |
| 105 | HOR | 12 | SPC | GRAPPLE | 16 | 14 | |
| 106 | HSV | 1 | LFR | GRAPPLE/HAND | 17 | 17 | 17 |
| 107 | HOR | 12 | SPC | GRAPPLE | 9 | 8 | |
| 108 | HTH | 13 | SPC | GRAPPLE | 5 | 5 | |
| 109 | HSV | 2 | SPC | GRAPPLE | 3 | 3 | |
| 110 | HSV | 1 | LFR | GRAPPLE/HAND | 8 | 8 | 8 |
| 111 | HSV | 1 | LFR | GRAPPLE/HAND | 8 | 8 | 8 |
| 112 | HSV | 2 | SPC | GRAPPLE | 8 | 8 | |
| 112.1 | HSV | 2 | SPC | GRAPPLE | 2 | 2 | |
| 113 | HTH | 4 | SPC | GRAPPLE/HAND | 5 | 5 | 5 |
| 114 | HTH | 4 | SPC | GRAPPLE/HAND | 2 | 2 | 2 |
| 115 | HTH | 4 | SPC | GRAPPLE | 4 | 4 | |
| 116 | HTH | 13 | SPC | GRAPPLE | 59 | 59 | |
| 117 | HCR | 10 | WHIP FELL | GRAPPLE | 5 | 4 | |
| 118 | HSV | 1 | LFR | GRAPPLE/HAND | 24 | 24 | 24 |

| Alternative 3 Unit | Treatments | | | | Acres | | |
|-----------------------|------------|------------------------------|-----------------|--------------|-------|-----|---------------------|
| | Harvest | Silviculture Prescription | Post Harvest | Fuels | Gross | Net | Riparian Reserve |
| 119 | HTH | 13 | SPC | GRAPPLE | 18 | 18 | |
| 119.1 | HOR | 12 | SPC | GRAPPLE | 51 | 46 | |
| 119.2 | HTH | 13 | SPC | GRAPPLE | 16 | 16 | |
| 120 | HTH | 13 | SPC | GRAPPLE | 13 | 13 | |
| 121 | HTH | 13 | SPC | GRAPPLE | 20 | 20 | |
| 122 | HFR | 12 | SPC | GRAPPLE | 3 | 3 | |
| 123 | HFR | 12 | SPC | GRAPPLE | 5 | 4 | |
| 124 | HOR | 12 | SPC | GRAPPLE | 37 | 33 | |
| 125 | HTH | 13 | SPC | GRAPPLE | 9 | 9 | |
| 126 | HTH | 13 | SPC | GRAPPLE | 95 | 95 | |
| 126.3 | HOR | 12 | SPC | GRAPPLE | 27 | 24 | |
| 127 | HFR | 12 | SPC | GRAPPLE | 5 | 4 | |
| 127.1 | HFR_RR | 12 | SPC | GRAPPLE/HAND | 1 | 1 | 1 |
| 128 | HSV | 1 | LFR | GRAPPLE/HAND | 8 | 8 | 8 |
| 129 | HSV | 1 | LFR | GRAPPLE/HAND | 17 | 17 | 17 |
| 130 | HOR | 12 | SPC | GRAPPLE | 74 | 67 | |
| 131 | HOR | 12 | SPC | GRAPPLE | 160 | 144 | |
| 132 | HSV | 1 | LFR | GRAPPLE/HAND | 20 | 20 | 20 |
| 133 | HSV | 1 | LFR | GRAPPLE/HAND | 4 | 4 | 4 |
| 134 | HOR | 12 | SPC | GRAPPLE | 48 | 43 | |
| 134.1 | HOR | 12 | SPC | GRAPPLE | 61 | 55 | |
| 135 | HCR | 10 | WHIP FELL | GRAPPLE | 12 | 11 | |
| 136 | HFR | 12 | SPC | GRAPPLE | 21 | 19 | |
| 137 | HCR | 10 | WHIP FELL | GRAPPLE | 8 | 7 | |
| 138 | HOR | 12 | SPC | GRAPPLE | 54 | 49 | |
| 139 | HCR | 10 | WHIP FELL | GRAPPLE | 11 | 10 | |
| 140 | HOR | 12 | SPC | GRAPPLE | 34 | 31 | |
| 140.1 | HOR | 12 | SPC | GRAPPLE | 39 | 35 | |
| 140.2 | HTH | 13 | SPC | GRAPPLE | 45 | 45 | |
| 141 | HTH | 13 | SPC | GRAPPLE | 17 | 17 | |
| 142 | HOR | 12 | SPC | GRAPPLE | 28 | 25 | |
| 143 | HSV | 1 | LFR | GRAPPLE/HAND | 16 | 16 | 16 |
| 144 | HSV | 1 | LFR | GRAPPLE/HAND | 3 | 3 | 3 |
| 145 | HTH | 13 | SPC | GRAPPLE | 40 | 40 | |
| 145.1 | HTH | 4 | SPC | GRAPPLE | 12 | 12 | |
| 146 | HSV | 2 | SPC | GRAPPLE | 6 | 6 | |
| 148 | HTH | 4 | SPC | GRAPPLE/MOW | 10 | 10 | |
| 149 | HTH | 4 | SPC | GRAPPLE | 44 | 44 | |
| 150 | HTH | 4 | SPC | GRAPPLE/HAND | 1 | 1 | 1 |
| 151 | HTH | 4 | SPC | GRAPPLE | 46 | 46 | |
| 152 | HTH | 4 | SPC | GRAPPLE | 9 | 9 | |
| 153.1 | HTH | 4 | SPC | GRAPPLE/HAND | 1 | 1 | 1 |
| 153.2 | HTH | 4 | SPC | GRAPPLE/HAND | 4 | 4 | 4 |
| 154 | HTH | 4 | SPC | GRAPPLE/HAND | 4 | 4 | 4 |
| 155 | HTH | 4 | SPC | GRAPPLE | 19 | 19 | |
| 156 | HTH | 13 | SPC | GRAPPLE | 11 | 11 | |
| 157 | HTH | 13 | SPC | GRAPPLE | 13 | 13 | |
| 158 | HTH | 4 | SPC | GRAPPLE | 6 | 6 | |
| 159 | HTH | 5 | SPC | GRAPPLE | 6 | 6 | |
| 160 | HSV | 1 | LFR | GRAPPLE/HAND | 31 | 31 | 31 |
| 161 | HOR | 12 | SPC | GRAPPLE | 39 | 35 | |
| 170 | HTH | 13 | SPC | GRAPPLE | 66 | 66 | |
| 172 | HOR | 12 | SPC | GRAPPLE | 3 | 3 | |
| 173 | HOR | 12 | SPC | GRAPPLE | 40 | 36 | |
| 174 | HOR | 12 | SPC | GRAPPLE | 7 | 6 | |

| Alternative 3 Unit | Treatments | | | | Acres | | |
|-----------------------|------------|------------------------------|-----------------|--------------|-------|-----|---------------------|
| | Harvest | Silviculture Prescription | Post Harvest | Fuels | Gross | Net | Riparian Reserve |
| 175 | HTH | 13 | SPC | GRAPPLE | 70 | 70 | |
| 176 | HOR | 12 | SPC | GRAPPLE/MOW | 1 | 1 | |
| 177 | HOR | 12 | SPC | GRAPPLE/MOW | 13 | 12 | |
| 178 | HFR | 12 | SPC | GRAPPLE | 11 | 10 | |
| 179 | HTH | 13 | SPC | GRAPPLE | 8 | 8 | |
| 180 | HCR | 10 | WHIP FELL | GRAPPLE/MOW | 21 | 19 | |
| 181 | HOR | 12 | SPC | GRAPPLE | 82 | 74 | |
| 181.1 | HCR | 10 | WHIP FELL | GRAPPLE | 101 | 91 | |
| 182 | HOR | 12 | SPC | GRAPPLE | 5 | 5 | |
| 183 | HOR | 12 | SPC | GRAPPLE | 57 | 54 | |
| 184 | HTH | 13 | SPC | GRAPPLE/MOW | 26 | 26 | |
| 185 | HTH | 13 | SPC | GRAPPLE | 34 | 34 | |
| 186 | HTH | 13 | SPC | GRAPPLE | 2 | 2 | |
| 187 | HTH | 13 | SPC | GRAPPLE | 48 | 48 | |
| 188 | HTH | 13 | SPC | GRAPPLE | 6 | 6 | |
| 189 | HTH | 13 | SPC | GRAPPLE | 33 | 33 | |
| 190 | HTH | 13 | SPC | GRAPPLE | 6 | 6 | |
| 191 | HTH | 13 | SPC | GRAPPLE/MOW | 15 | 15 | |
| 192 | HTH | 13 | SPC | GRAPPLE | 147 | 147 | |
| 193 | HTH | 13 | SPC | GRAPPLE/MOW | 48 | 48 | |
| 194 | HTH | 13 | SPC | GRAPPLE/MOW | 15 | 15 | |
| 195 | HTH | 13 | SPC | GRAPPLE | 8 | 8 | |
| 196 | HTH | 13 | SPC | GRAPPLE/MOW | 28 | 28 | |
| 197 | HTH | 13 | SPC | GRAPPLE/MOW | 10 | 10 | |
| 198 | HTH | 5 | SPC | GRAPPLE/HAND | 3 | 3 | 3 |
| 199 | HTH | 5 | SPC | GRAPPLE | 13 | 13 | |
| 200 | HTH | 5 | SPC | GRAPPLE | 3 | 3 | |
| 201 | HTH | 5 | SPC | GRAPPLE/HAND | 1 | 1 | 1 |
| 202 | HTH | 5 | SPC | GRAPPLE | 40 | 40 | |
| 203 | HTH | 6 | SPC | GRAPPLE | 44 | 44 | |
| 204 | HSV | 1 | LFR | GRAPPLE/HAND | 3 | 3 | 3 |
| 205 | HTH | 6 | SPC | GRAPPLE | 8 | 8 | |
| 206 | HTH | 13 | SPC | GRAPPLE | 25 | 25 | |
| 207 | HTH | 13 | SPC | GRAPPLE | 33 | 33 | |
| 300 | HOR | 12 | SPC | GRAPPLE | 241 | 238 | |
| 300.3 | HFR | 12 | SPC | GRAPPLE | 25 | 22 | |
| 301 | HSV | 1 | LFR | GRAPPLE/HAND | 24 | 24 | 24 |
| 302 | HSV | 1 | LFR | GRAPPLE/HAND | 40 | 40 | 40 |
| 303 | HSV | 1 | LFR | GRAPPLE | 41 | 41 | |
| 304 | HFR | 12 | SPC | GRAPPLE | 13 | 12 | |
| 305 | HTH | 13 | SPC | GRAPPLE | 58 | 58 | |
| 305.1 | HTH | 13 | SPC | GRAPPLE | 13 | 13 | |
| 305.2 | HFR | 12 | SPC | GRAPPLE | 9 | 8 | |
| 305.3 | HFR | 12 | SPC | GRAPPLE | 1 | 1 | |
| 305.4 | HFR | 12 | SPC | GRAPPLE | 2 | 2 | |
| 305.8 | HTH | 13 | SPC | GRAPPLE | 10 | 10 | |
| 306 | HSV | 1 | LFR | GRAPPLE/HAND | 11 | 11 | 10 |
| 309 | HTH | 4 | SPC | GRAPPLE | 63 | 63 | |
| 309.1 | HTH | 4 | SPC | GRAPPLE | 3 | 3 | 3 |
| 310 | HTH | 4 | SPC | GRAPPLE | 2 | 2 | 2 |
| 310.1 | HTH | 4 | SPC | GRAPPLE | 24 | 24 | |
| 310.2 | HTH | 5 | SPC | GRAPPLE | 12 | 12 | |
| 311 | HSV | 1 | LFR | GRAPPLE/HAND | 3 | 3 | 3 |
| 312 | HFR | 12 | SPC | GRAPPLE/MOW | 8 | 7 | |
| 313 | HTH | 13 | SPC | GRAPPLE/MOW | 17 | 17 | |

| Alternative 3 Unit | Treatments | | | | Acres | | |
|-----------------------|------------|------------------------------|-----------------|--------------|--------------|--------------|---------------------|
| | Harvest | Silviculture Prescription | Post Harvest | Fuels | Gross | Net | Riparian Reserve |
| 313.1 | HFR | 12 | SPC | GRAPPLE/MOW | 2 | 2 | |
| 314 | HFR | 12 | SPC | GRAPPLE | 4 | 4 | |
| 317 | HSV | 1 | LFR | GRAPPLE/HAND | 8 | 8 | 8 |
| 318 | HSV | 1 | LFR | GRAPPLE/HAND | 3 | 3 | |
| 319 | HOR | 12 | SPC | GRAPPLE | 5 | 4 | |
| 319.1 | HOR | 12 | SPC | GRAPPLE/HAND | 3 | 3 | 3 |
| 320 | HSV | 1 | LFR | GRAPPLE | 4 | 4 | |
| 321 | HFR | 12 | SPC | GRAPPLE | 18 | 16 | |
| 322 | HFR | 12 | SPC | GRAPPLE | 28 | 25 | |
| 325 | HOR | 12 | SPC | GRAPPLE | 3 | 3 | |
| 326 | HTH | 4 | SPC | GRAPPLE | 2 | 2 | |
| 327 | HTH | 4 | SPC | GRAPPLE/HAND | 7 | 7 | 7 |
| 328 | HOR | 12 | SPC | GRAPPLE/HAND | 4 | 4 | 4 |
| 329 | HOR | 12 | SPC | GRAPPLE | 1 | 1 | |
| TOTAL | ----- | ----- | ----- | ----- | 6,293 | 6,099 | 351 |

| | | | |
|-----|-------------------------------------|-----------|-----------------------|
| HTH | Harvest Commercial Thin | SPC | Precommercial thin |
| HFR | Harvest Final Removal | LFR | Ladder fuel reduction |
| HSV | Harvest Salvage | WHIP FELL | hand fell whips |
| HOR | Harvest Overstory Removal | MOW | Machine shrub treat |
| HCR | Regeneration Cut with Reserve trees | GRAPPLE | Grapple pile slash |
| HSH | Regeneration Cut Shelterwood | HAND | Hand pile slash |

Appendix B

Alternative 3 Mitigation and Design Criteria Features

Fire and Fuels

1. All pile burning would be conducted under the State of Oregon Smoke Management System to track smoke produced and would be coordinated through Oregon Department of Forestry (**Effectiveness: High**).
2. Pile burning would be conducted under favorable smoke dispersal conditions, to avoid impacts to urban areas and Class I airsheds (Clean Air Act discussion below). Inversion conditions, which would increase the potential for smoke pooling in valleys and drainages, would be avoided during burning operations (**Effectiveness: High**).

Wildlife

Spotted Owl

1. One-quarter mile seasonal restriction around nest site or activity center. Affects Units 1, 2, 3, 6, 14, 15, 129, 130, 133, 140, 300, and 310. March 1 through September 30 (**Effectiveness: Moderate**).
2. Burning of piles that are within 0.25 mile of mapped Nesting, Roosting, and Foraging (NRF) habitat will occur outside of the spotted owl breeding season (March 1 – September 30) (**Effectiveness: High**).

Bald eagle

1. One-quarter mile seasonal restriction for project activities (1/2 mile line-of-sight) around nest. Potentially affects Units 29, 30, 31, 129, 130, 133, 138, 203, 204, 205, 300, 301, and 318. January 1st through August 31st (**Effectiveness: Moderate**).
2. In order to minimize smoke from entering suitable habitat (including BEMAs and stands with large diameter ponderosa pine or Douglas fir associated with water, EA table 44), burning of piles will be conducted outside of the bald eagle breeding season (January 1 – August 31) (**Effectiveness: High**).
3. No piles will be located within 330 feet of any existing bald eagle nest, including alternate nest sites to prevent nest tree mortality affects unit 203 (**Effectiveness: High**).
4. Avoid removal of overstory trees (excluding lodgepole pine) within 330 feet of any nest affects unit 203 (**Effectiveness: High**).
5. Recommend minimizing potentially disruptive activities and development in the eagle's direct flight path between nest and roost sites and important foraging areas. Potentially affect Units 31, 31.1, 31.2, 31.3, 129, 133, 143, 198, 199, 200, 201, 202, , and 301. January 1st through August 31st (**Effectiveness: Moderate**).
6. Protect and preserve potential roost and nest sites by retaining mature ponderosa pine and Douglas fir trees, particularly within one-half mile from water Potentially affect Units 31, 31.1, 31.2, 31.3, 34, 36, 129, 133, 143, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207 and 301 (**Effectiveness: High**).
7. Maintain gates and screening around gates so as not compromise road closure in BEMAs (**Effectiveness: High**).

Other Raptors

1. Any active raptor nest stands found during management activities will be protected from disturbing activities within ¼ mile of the nest by restricting site disturbing operations during the following periods (**Effectiveness: Moderate**)

| | |
|--------------------|----------------------|
| Cooper's hawk | April 15 – August 31 |
| Sharp-shinned hawk | April 15 – August 31 |
| Northern goshawk | March 1 – August 31 |
| Red-tailed hawk | March 1 – August 31 |

| | |
|----------------|--|
| Osprey | April 1 – August 31; known nest sites affect Units 33, 198-207 |
| Great Gray owl | March 1 – June 30 |

2. Certain active raptor nest stands found during management activities will be protected from disturbing activities through designation of a no-activity core area of the following sizes around the nest trees.

(**Effectiveness:** *Moderate*).

| | |
|--------------------|----------|
| Cooper's hawk | 15 acres |
| Sharp-shinned hawk | 10 acres |
| Northern goshawk | 30 acres |
| Great Gray owl | 30 acres |

Oregon Spotted Frog

1. Remove temporary crossing improvement on Forest Road 4600542 before soils regain moisture. Affects Unit 29 (Alternative 2) and Units 29.1, 311, 311.1, and 318 (Alternative 3) March through July (**Effectiveness:** *High*).
2. Limit activities within streamside Riparian Reserve units channel migration zone or 100-year floodplain to those that have either a neutral or beneficial effect on floodplain function. Timing of those activities will be outside egg/laying hatching for that area. If not known then March 1 – May 31 (**Effectiveness:** *High*).

Coarse Woody Debris/ Snags:

- a. Retain all non lodgepole pine coarse wood and logs. (**Effectiveness:** *High*).
- b. Retain down lodgepole logs greater than 16 feet long and 16 inches diameter on the small end. (**Effectiveness:** *Moderate*).
- c. Retain cull lodgepole pine logs greater than 10 inches diameter small end and more than 15 feet long (cull is greater than 60% of log soft rot or non fiberable piece) following fuels reduction maintain at least 6 pieces per acre. (**Effectiveness:** *Moderate*).
- d. Retain all non lodgepole snags. (**Effectiveness:** *High*).
- e. Retain all lodgepole pine snags greater than or equal to 20 inches dbh. (**Effectiveness:** *high*).
- f. Including snags retained in mitigations 4 & 5 retain snags greater than or equal to 10 inches dbh in lodgepole pine plant associations at two per acre and in mixed conifer and ponderosa pine plant associations four per acre. (**Effectiveness:** *Moderate*).
- g. In Units with prescription 10, 11 & 12 (regeneration treatments) retain all snags and down and dead wood in green tree retention clumps. (**Effectiveness:** *High*).
- h. Where monitoring (monitoring item 6) shows that down woody debris does not meet NWFP and LRMP levels retain up to one slash pile per acre as needed to supplement down wood debris needs. (**Effectiveness:** *Moderate*).
- i. Do not salvage any snags or coarse woody material from units 99, 100, and 101. Retain all snags greater than 15 inches dbh in unit 36. (**Effectiveness:** *High*)

Other Mitigation:

1. **Songbirds:** Recommendation to avoid negative effects to birds, including: nest destruction, loss of broods, and direct mortality of adults, do not conduct mechanical shrub treatments during the period of April 15 – July 31. Units 76 and 78. (**Effectiveness:** *Moderate*)
2. **Temporary Roads:** At any time during implementation of harvest treatments, limit miles of open temporary road within the Snow Project Area to less than 4 miles. Include in the timber sale contract(s) provisions that the temporary road will be closed immediately after direct sale activities (wood-cutting and hauling). Objective is to reduce potential for vehicle travel to expand beyond the established road system, thereby reducing potential for wildlife disturbance, noxious weed spread, and OHV use. (**Effectiveness:** *Moderate*)

3. **Temporary Roads:** To reduce human and sale activity disturbance in elk calving habitat the temporary roads accessing: Unit 181, 160, 161, 130, 131 for both Alternatives and Units 300, 322, 321, and 181.1 under Alternative 3 would have a seasonal restriction of use from May 1 through June 30th.
(**Effectiveness:** *High*)
4. **Gated Roads:** In the specific example of Units 160, 161, 130, 131 for both Alternatives and Units 300, 322, 321 under Alternative 3, the temporary road segments are accessed by an existing gated road. This gate will be closed at the end of each day of sale activities. The objective is to utilize an existing barrier to further assure limited wildlife disturbance, noxious weed spread, and OHV use.

Table 1: Summary of Operating Season Mitigation

| Mitigation | O = Open Season X = Closed Season | | | | | | | | | | | |
|--|-----------------------------------|---|---|----|---|---|---|---|---|---|---|---|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| High water Season – Operate only in open season or within conditions as described: Units 142 & 154 (soils) | | | | | | | | O | O | | | |
| Spotted Owl – no operation within ¼ mi of nest: Units 1, 2, 3, 6, 14, 15, 129, 130, 133, 140, 300, 310 | | | X | X | X | X | X | X | X | | | |
| Bald Eagle – if present: Units 29-31, 129, 130, 133, 138, 203-205, 300, 301, 318 | X | X | X | X | X | X | X | X | | | | |
| Spotted Frog Riparian Reserve Units 100 year flood plain Migration and Channel dispersal | | | X | X | X | | | | | | | |
| Spotted Frog Egg laying at crossings. Units 29, 311, 318 | | | X | X | X | X | X | | | | | |
| Osprey Nest area: Units 33, 198-207 | | | | X | X | X | X | X | | | | |
| Song Birds – no mowing: Units 76, 78 | | | | 15 | X | X | X | | | | | |
| Eagle dispersal flying between nest and roost sites Units 129, 133, 143, 199-202, 301 | X | X | X | X | X | X | X | X | | | | |
| Elk Calving Habitat – Seasonal Temporary Road Restriction – Units 181, 160,161,130,131; Alternative 3 only Units 181.1 300, 321, 322. | | | | | X | X | | | | | | |

Soils

Management Requirements

1. Use old landings and skidding networks whenever possible. Assure that water control structures are installed and maintained on skid trails that have gradients of 10 percent or more. Ensure erosion control structures are stabilized and working effectively (LRMP SL-1; Timber Management BMP T-16, T-18) (**Effectiveness:** *High*).
2. In all proposed activity areas, locations for new yarding and transportation systems would be designated prior to the logging operations. This includes temporary roads, spur roads, log landings, and primary (main) skid trail networks. (LRMP SL-1 & SL-3; Timber Management BMP T-11, T-14 & T-16) (**Effectiveness:** *Moderate*).
3. *Surface Drainage on Temporary Roads* – minimize the erosive effects of concentrated water and degradation of water quality through the proper design and construction of temporary roads (Road BMP R-7) (**Effectiveness:** *Moderate*).

4. *Road Maintenance* – conduct regular preventive maintenance to avoid deterioration of the road surface and minimize the effects of erosion and sedimentation (Road BMP R-18, R-19) (**Effectiveness:** *Moderate to high*).
5. *Coarse Woody Debris/Down Wood* - Retain adequate supplies of coarse woody debris (greater than 3-inches in diameter) to provide organic matter reservoirs for nutrient cycling following the completion of all project activities (LRMP SL-1). It is recommended that a minimum of 5 to 10 tons per acre of CWD be retained on Ponderosa Pine sites, and 10 to 15 tons of CWD per acre should be retained on mixed conifer and lodgepole pine sites to help maintain long-term site productivity. These amounts are less than the recommended levels to be left for wildlife habitat objectives (**Effectiveness:** *Moderate*).
6. *Maintain duff layer* – Strive to maintain fine organic matter (organic materials less than 3-inches in diameter; commonly referred to as the duff layer) over at least 65 percent of an activity area (pertains to both harvesting and post-harvest operations). If the potential natural plant community (i.e., site) is not capable of producing fine organic matter over 65 percent of the area, adjust minimum amounts to reflect potential vegetation site capabilities (LRMP SL-6; Fuels Management BMP F-2; Timber Management BMP T-13). (**Effectiveness:** *Moderate*).

Project Design Criteria

Minimize the extent of new soil disturbance from mechanical treatments by implementing appropriate design elements for avoiding or reducing detrimental soil impacts from project activities. Options include using some or all of the following:

Objective: Reduce displacement and compaction damage to soils by limiting the amount of surface area covered by logging facilities, and limiting equipment operations to specified areas and ground conditions.

- 1) Use existing log landings and skid trail networks (whenever possible) or designate locations for new skid trails and landings.
- 2) Maintain spacing of 100 to 150 feet for all primary (main) skid trail routes, except where converging at landings. Closer spacing due to complex terrain must be approved in advance by the Timber Sale Administrator. Main skid trails spaced 100 feet apart limit soil impacts to 11 percent of the unit area. For the larger activity areas (greater than 40 acres) that can accommodate wider spacing distances, it is recommended that distance between main skid trails be increased to 150 feet to reduce the amount of detrimentally disturbed soil to 7 percent of the unit area (Froehlich, 1981, Garland, 1983). This would reduce the amount of surface area where restoration treatments, such as subsoiling, would be required to mitigate impacts to achieve soil management objectives.
- 3) Restrict grapple skidders to designated areas (i.e., roads, landings, designated skid trails) at all times, and limit the amount of traffic from other specialized equipment off designated areas. The use of harvester machines will be authorized to make no more than two equipment passes on any site-specific area to accumulate materials.
- 4) Avoid equipment operations during times of the year when soils are extremely dry and subject to excessive soil displacement.
- 5) Avoid equipment operations during periods of high soil moisture, as evidenced by equipment tracks that sink deeper than during dry or frozen conditions.
- 6) Operate equipment over frozen ground or a sufficient amount of compacted snow to protect mineral soil. Equipment operations should be discontinued when frozen ground begins to thaw or when there is too little compacted snow and equipment begins to cause soil puddling damage (rutting).
- 7) Prevent additional soil impacts in random locations of activity areas, between skid trails and away from landings, by machine piling and burning logging slash on existing log landings and skid trails that already have detrimental soil conditions.

Mitigation Measure:

1. Restrict mechanical disturbance in potentially wet areas that contain seasonally-high water tables. Locate designated skid trails and log landings on well-drained sites, upslope from potentially wet areas. Restrict grapple skidding equipment to roads and designated skid trails at all times. Mechanical harvesters would only be allowed to make no more than two equipment passes on any site-specific area between main skid trails or away from log landings. Conduct mechanized harvest and salvage activities during the drier portion of the summer/fall (August and September) operating season. Limit the depth of subsoiling treatments to the minimum necessary to loosen compacted soils on main skid trails and log landings. Exceptions would be subject to Forest Service approval (**Effectiveness: High**).

Portions of the following EA units contain sensitive soils with seasonally-high water tables.

Alternative 3 Units: 142, 154, and 301.

Objective: Protect or maintain the quality of soil properties and shallow rooted vegetation by controlling equipment operations to locations and conditions that are less susceptible to soil puddling and compaction damage. Confine equipment impacts to designated areas that can be mitigated following harvest and post-harvest activities (**Effectiveness: High**).

2. Reclaim all temporary roads, and some log landings and primary (main) skid trails by applying appropriate rehabilitation treatments in activity areas where detrimental soil conditions are expected to exceed the Regional Policy guidelines following mechanical treatments proposed with this project. Decommission (obliterate) logging facilities that will not be needed for future management. Options for mitigating the effects of project activities include the use of subsoiling equipment to loosen compacted soils on temporary roads and logging facilities, redistributing humus-enriched topsoil in areas of soil displacement damage, and pulling available slash and woody materials over the treated surface to establish effective ground cover protection (**Effectiveness: High**).

Alternative 3 EA Units: 18 – 23, 29, 37 – 41, 43 – 45, 53 – 56, 58 – 61, 63, 65, 66, 69.1, 70 – 72, 74, 75, 77, 79- 93, 99 – 102, 105, 111, 112, 112.1, 117, 119.1, 122 – 124, 126.3, 127, 127.1, 130, 131, 134, 134.1, 135 – 140, 140.1, 140.2, 141, 142, 149 – 152, 153.1, 153.2, 154, 155, 159, 161, 170, 172 – 181, 181.1, 182 – 190, 196, 197, 300, 300.3, 304, 305, 305.1, 305.2, 305.3, 305.4, 305.8, 310, 310.1, 310.2, 312, 313, 313.1, 314, 319, 319.1, 319.2, 320 – 322, 325, 328, and 329.

Objectives: Reduce the extent of detrimentally disturbed soil to meet management objectives. Restore and stabilize detrimentally disturbed soils prior to seasonal runoff events.

Ongoing Research

1. Ongoing research plots will be excluded from treatment areas either through revision of the unit boundary or flagging sites for avoidance. A 100 foot buffer will be established around the study plots. (**Effectiveness: High**).

The following units, by alternative, include plots associated with the active study titled “Levels of Lodgepole Pine Growing Stock”. The initial researcher was Walter G. Dahms.

Alternative 3: Units 170 and 303.

Fish and Hydrology

1. Units 104, 106, 110, 111, and 113 are within Riparian Reserves of Snow Creek and the Deschutes River, and have localized areas of slope greater than 5 percent but predominantly less than 10%. During layout of these units for implementation, a fisheries biologist, hydrologist, or soil scientist would be on-site to determine if excluding the use of logging equipment (including commercial firewood trucks) would be required to prevent overland flow of sediments to the streams. Areas excluded to logging equipment operation would be treated with non-mechanized methods, such as hand crews, that limit disturbance to the soil organic layer and ground cover (**Effectiveness: High**).

2. *Servicing and Refueling of Equipment, Fuel Storage* - Servicing and refueling of equipment and storage of fuels and other toxicants used during salvage or vegetation management activities shall occur outside of Riparian Reserves. (Timber Management BMP T-21)
3. *Handpiling within Riparian Reserves* - All hand piling within Riparian Reserves would occur a minimum of 50 feet from wetland vegetation. Placement of handpiles would focus on upslope areas and avoid areas of washed and depressions that may facilitate water run-off toward streams. Burning would occur under conditions that do not allow excessive creeping from the pile, generally 10 feet or less. Handpiles should not exceed 100 ft². (Adapted from Joint Aquatic and Terrestrial Programmatic Biological Assessment; Project Design Criteria for bull trout, Chinook salmon, and steelhead trout) (**Effectiveness: High**)
4. Activities common to Zones 2-4: Adjacent to streams, non-commercial thinning of trees <4" dbh would occur greater than 12 feet from the edge of water for trees less than 20 feet tall, and greater than 28 feet for trees greater than 20 feet tall. Engelmann spruce would not be included in non-commercial thinning.

Botany – Invasive Plants

1. Before ground-disturbing activities begin, prioritize and manually treat weed infestations in project operating areas (Unit 177) and along access routes (EA appendix E). (**Effectiveness: Moderate**).
2. Use clean-equipment contract clauses (local and regional) to minimize the introduction and spread of noxious weeds by contractors (**Effectiveness: Moderate**).
3. Conduct operations in uninfested units before operating in infested areas (unit 177) (**Effectiveness: Moderate**).
4. Known weed sites will be shown on the Sale Area Map. Landings and skid trails will not be allowed within these sites (unit 177) (**Effectiveness: Moderate**).
5. Minimize soil disturbance and retain native vegetation, in and around project activity areas, to the extent possible consistent with project objectives (**Effectiveness: Moderate**).

Scenic

1. Design fuel and vegetation units to minimize ground disturbance and damage to vegetation in foreground treatment areas (First 300 feet – Highway 46, Roads 40 and 4270) (**Effectiveness: High**).
2. Minimize the amount of marking paint that is visible or paint over with natural colors following harvest in visual corridors of Highway 46, Roads 40 and 4270, and recreation sites (**Effectiveness: Medium**).
3. Where possible locate skid trails and landings at least 300 feet away from Highway 46, Roads 40 and 4270 (**Effectiveness: High**).
4. Flush cut stumps to less than 6 inches in height within the first 300 feet from Highway 46, Roads 40 and 4270, and recreation sites (**Effectiveness: High**).
5. Clean-up activities in foreground treatment areas, including landings, skid trails, and slash piles, should be completed within two years post-treatment (**Effectiveness: High**).
6. Locate slash piles for burning in areas that will minimize scorching within foreground treatment areas. Severely damaged or burned trees (more than two-thirds live crown scorch) shall be removed as part of post-treatment activities within two years. Locate grapple piles on logging facilities (**Effectiveness: High**).
7. In Foreground areas remove visible flagging when unit activities are completed (**Effectiveness: High**).

Units along Highway 46 and Road 40 include: 1, 2, 3, 5, 11, 12, 13, 15, 16, 17, 22, 23, 37, 38, 39, 41, 42, 43, 44, 45, 65, 103, 104, 105, 106, 133, 134, 138, 139, 140, 142, 144, 145, 146, 148, 176, 177, 180, 181, 311, 312, 313, 314, 316

Foreground units along Road 4270 include: 107, 108, 114, 119, 123, 126, 127, 170, 179, 184, 193, 195, 196, and 197.

Foreground units besides those along Highway 46 and Roads 40 and 4270 include: 6, 14, 18, 19, 20, 21,

Cultural Resources

1. Seven eligible or unevaluated cultural resource sites will be excluded from treatment areas either through revision of the unit boundary or flagging sites for avoidance. An appropriate buffer will be established for the latter method of avoidance by coordinating with the responsible individual(s) to identify and mark areas requiring protection (**Effectiveness: High**)
2. In the event that previously unknown sites or artifacts are found during project implementation, they will be flagged and operations in the area avoided until an archaeologist is consulted (**Effectiveness: High**).

Recreation

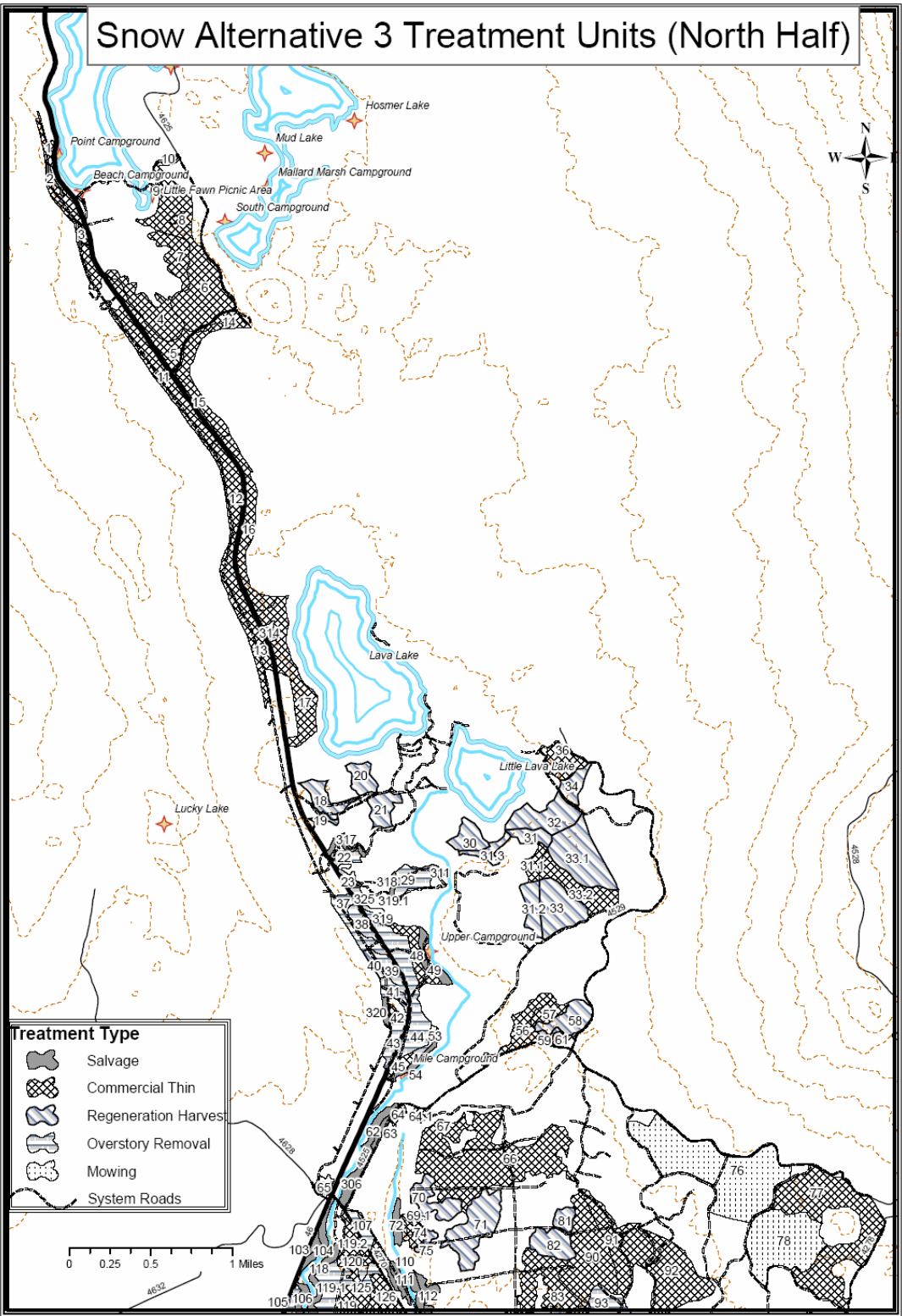
1. Traditional informal campsites, hunter camps, or areas where concentrated recreation use occurs will be recognized as being significant in producing and utilizing dispersed recreation opportunities. Prescriptions for harvesting, cleanup, site preparation, and thinning will consider the environmental setting that contributes to the attraction of these sites for recreation purposes. The attempt will be made to retain this attractive character after treatments (LRMP S&G M8-2, page 4-117). (Effectiveness: High).
2. Locate landings at a minimum 200 feet from trails and trailheads (Effectiveness: Moderate).
3. Only allow trail crossings by skidders and skid trails greater than 200 feet apart (Effectiveness: Moderate).
4. Yard/locate bundles of trees as far from trails as possible. (Effectiveness: Moderate).
5. Restore trail tread and trailheads to pre-treatment condition following activities (Effectiveness: High).
6. For safety trails and sites within units will be closed during harvest operations. (Effectiveness: High).

Sale Area Improvements

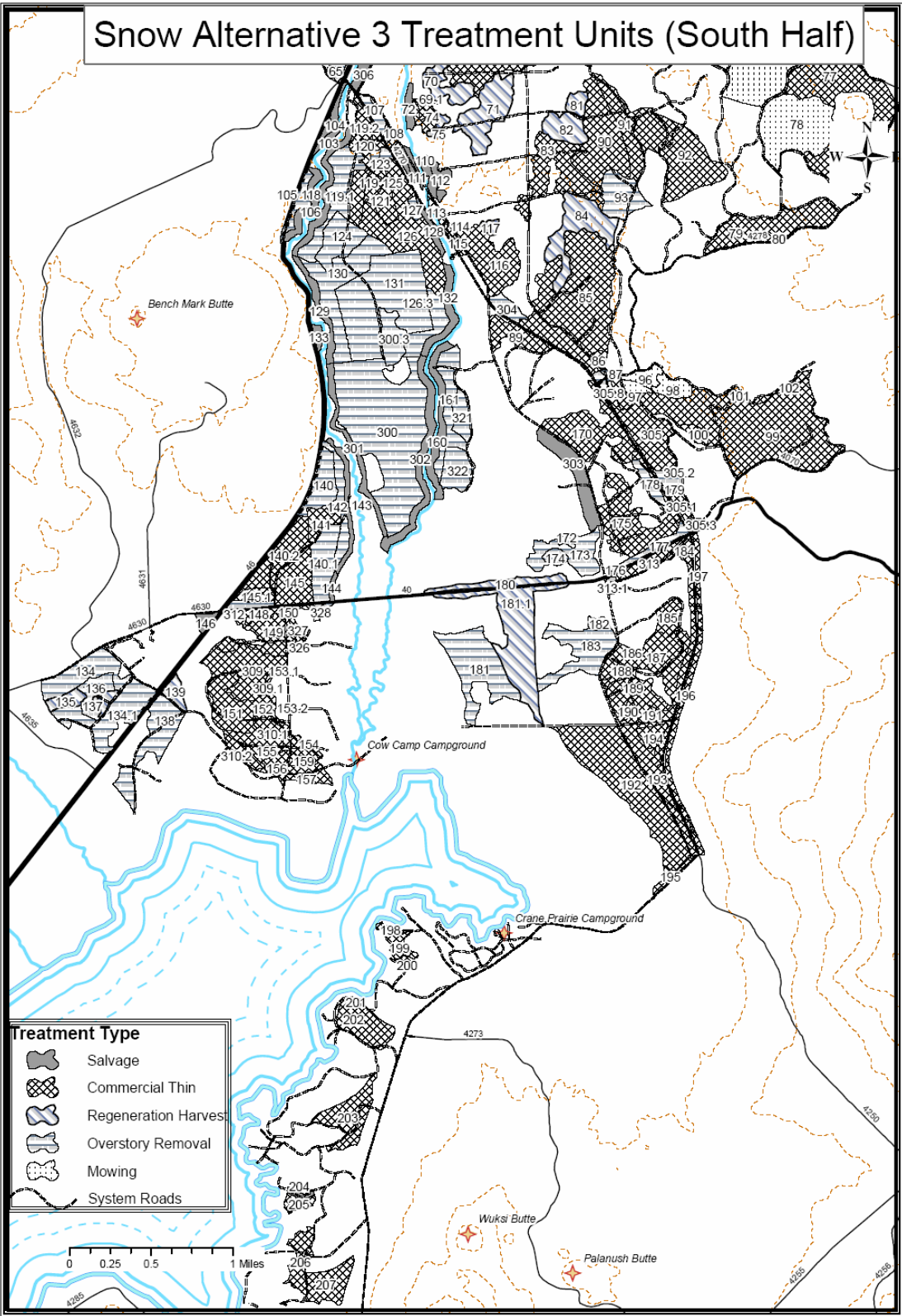
| | |
|--|---|
| Stocking Surveys in regeneration units. | Whip felling. |
| Subsoiling. | Monitor Gate Closures. |
| Weed Surveys on Subsoiled acres. | Weed Surveys of weed sites in units. |
| Rehabilitation of impacted trailhead. | Rehabilitation of trails impacted by logging. |
| Precommercial thinning. | Precommercial thinning slash piling |
| Raking fuels accumulations from around nest trees in BEMA units. | |
| Flagging Removal in Scenic Corridors. | |

Appendix C

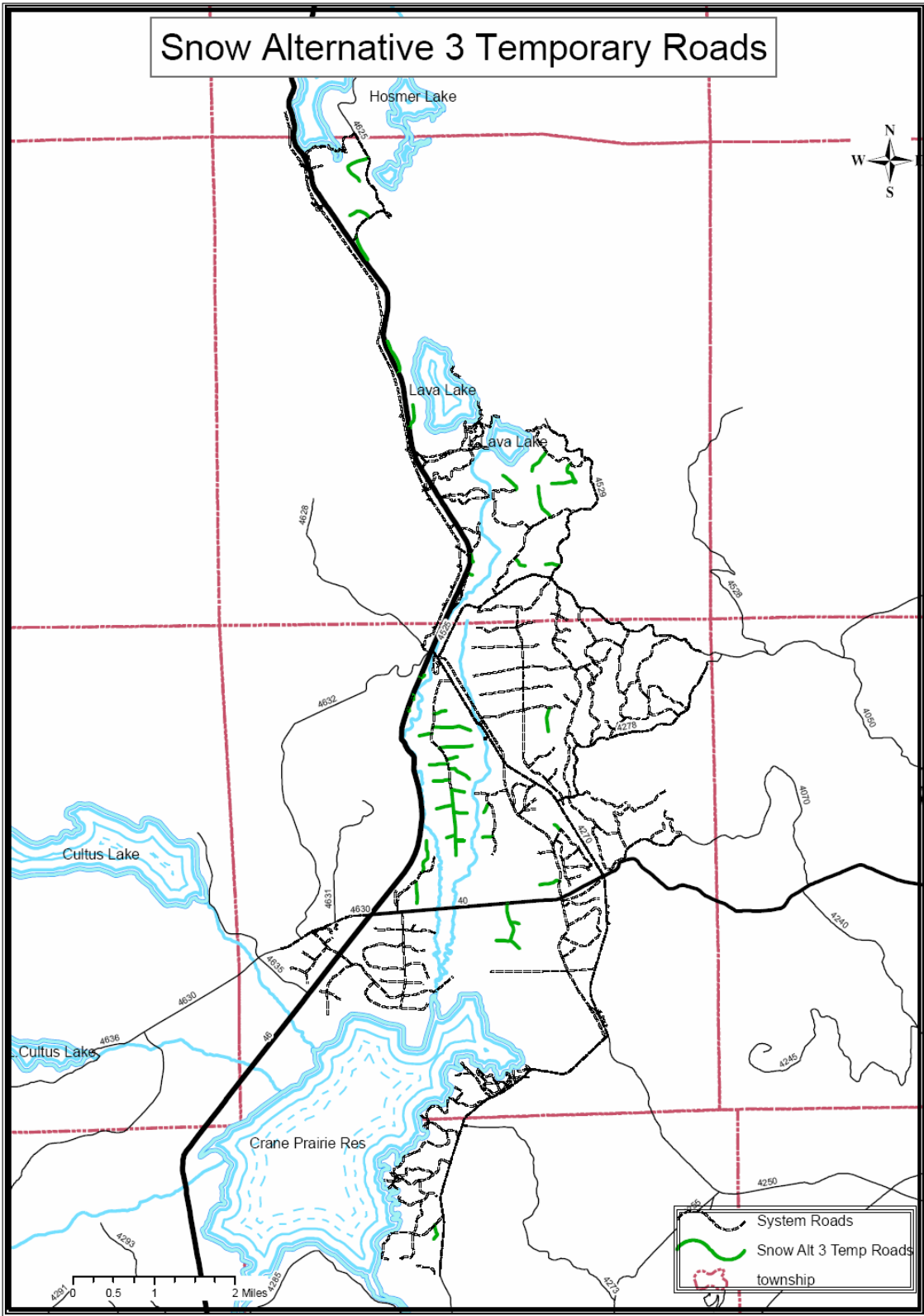
Map 1 Selected Alternative - Snow Treatment Units (North One Half)



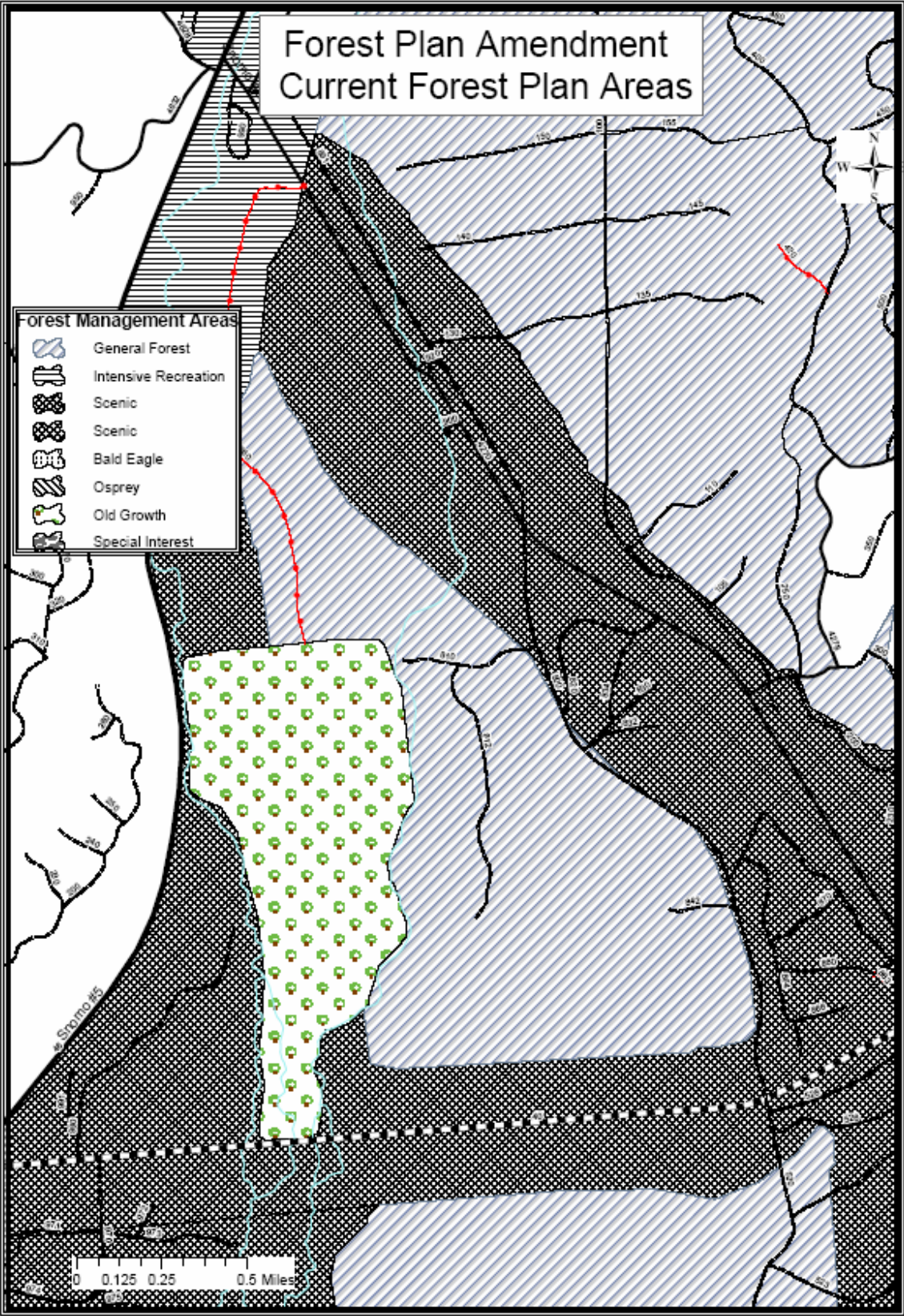
Map 2: Selected Alternative - Snow Treatment Units (South One Half)



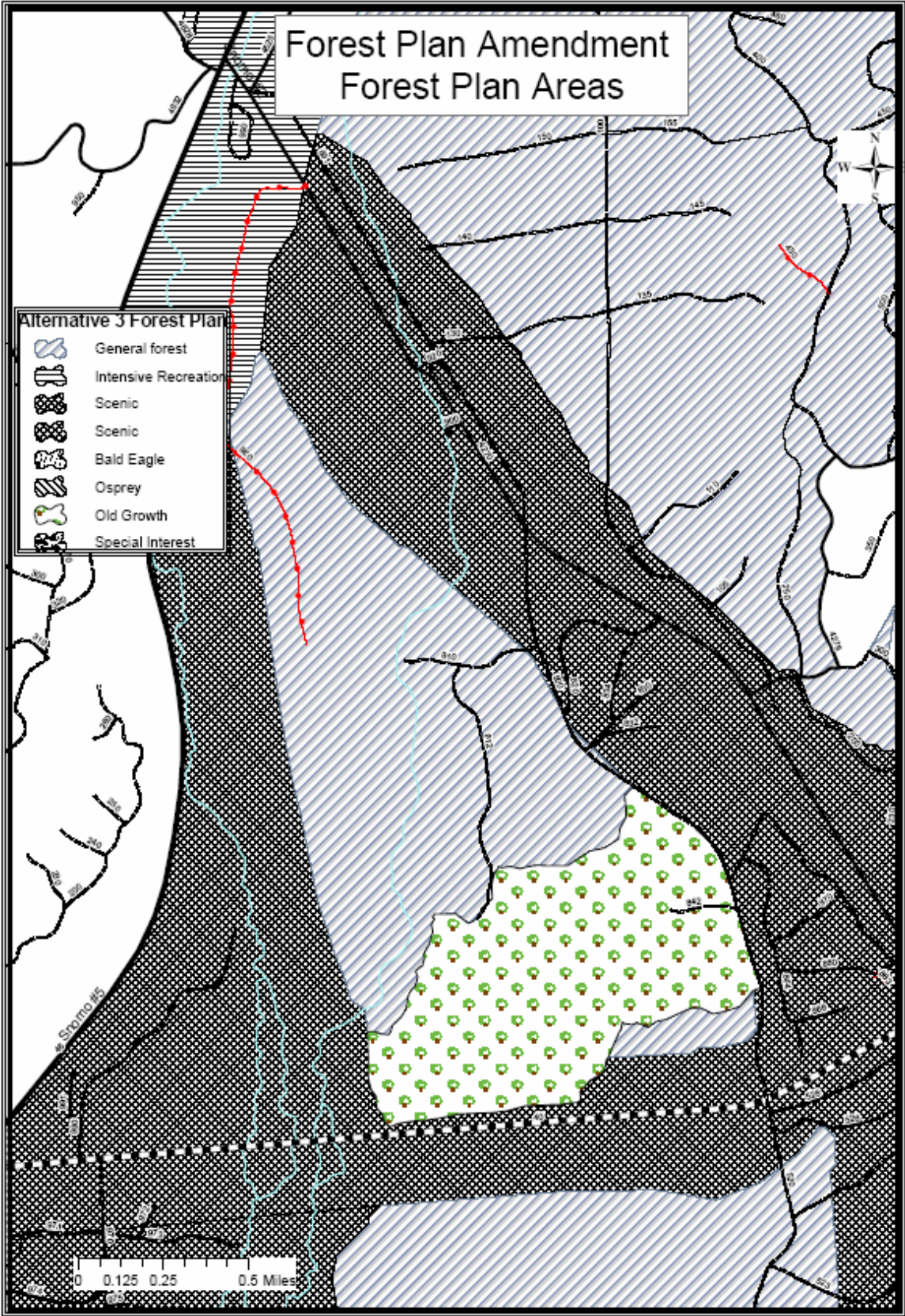
Map 3 Selected Alternative - Temporary Roads



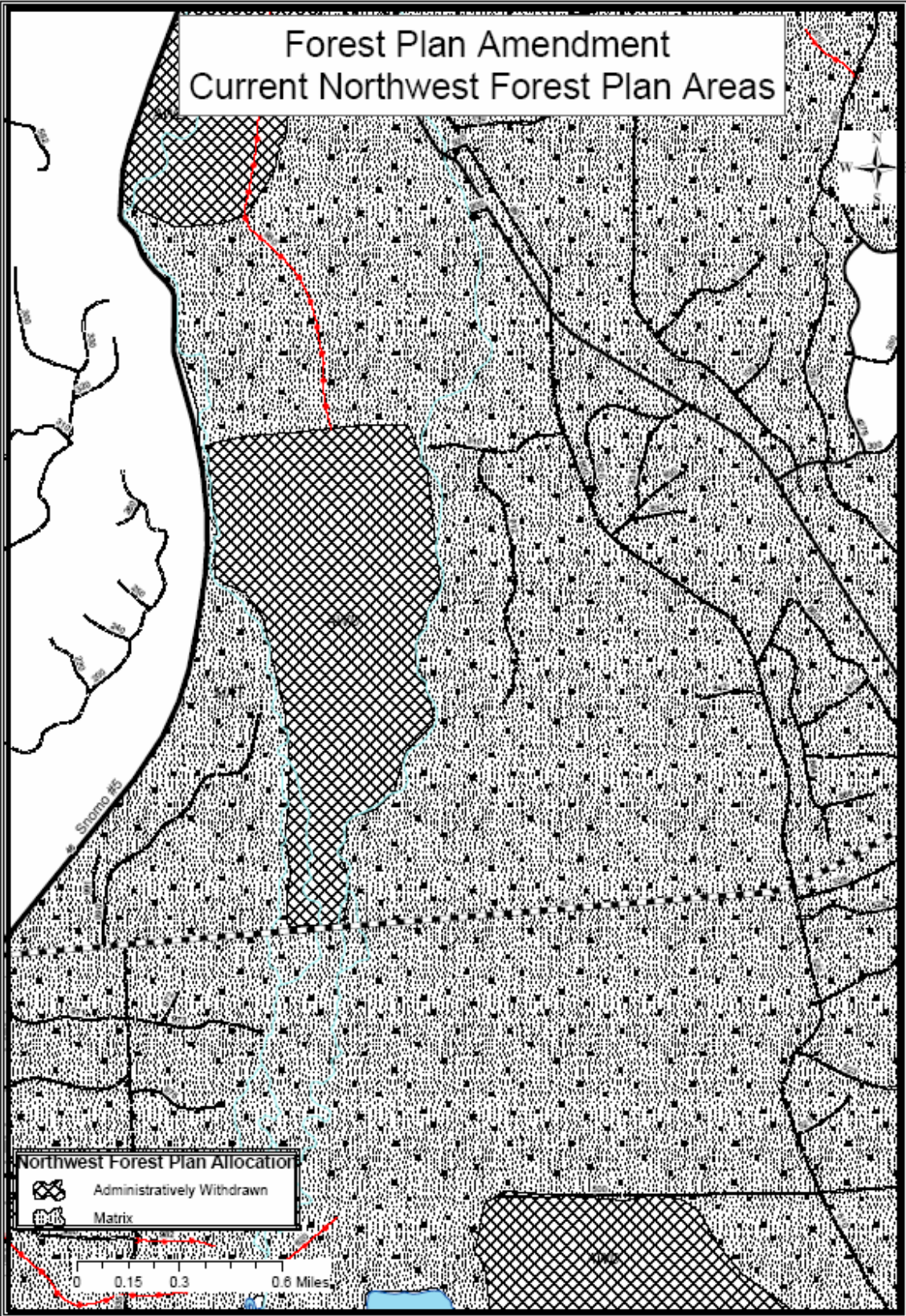
Map 4 Selected Alternative - Forest Plan Amendment Current Management Area



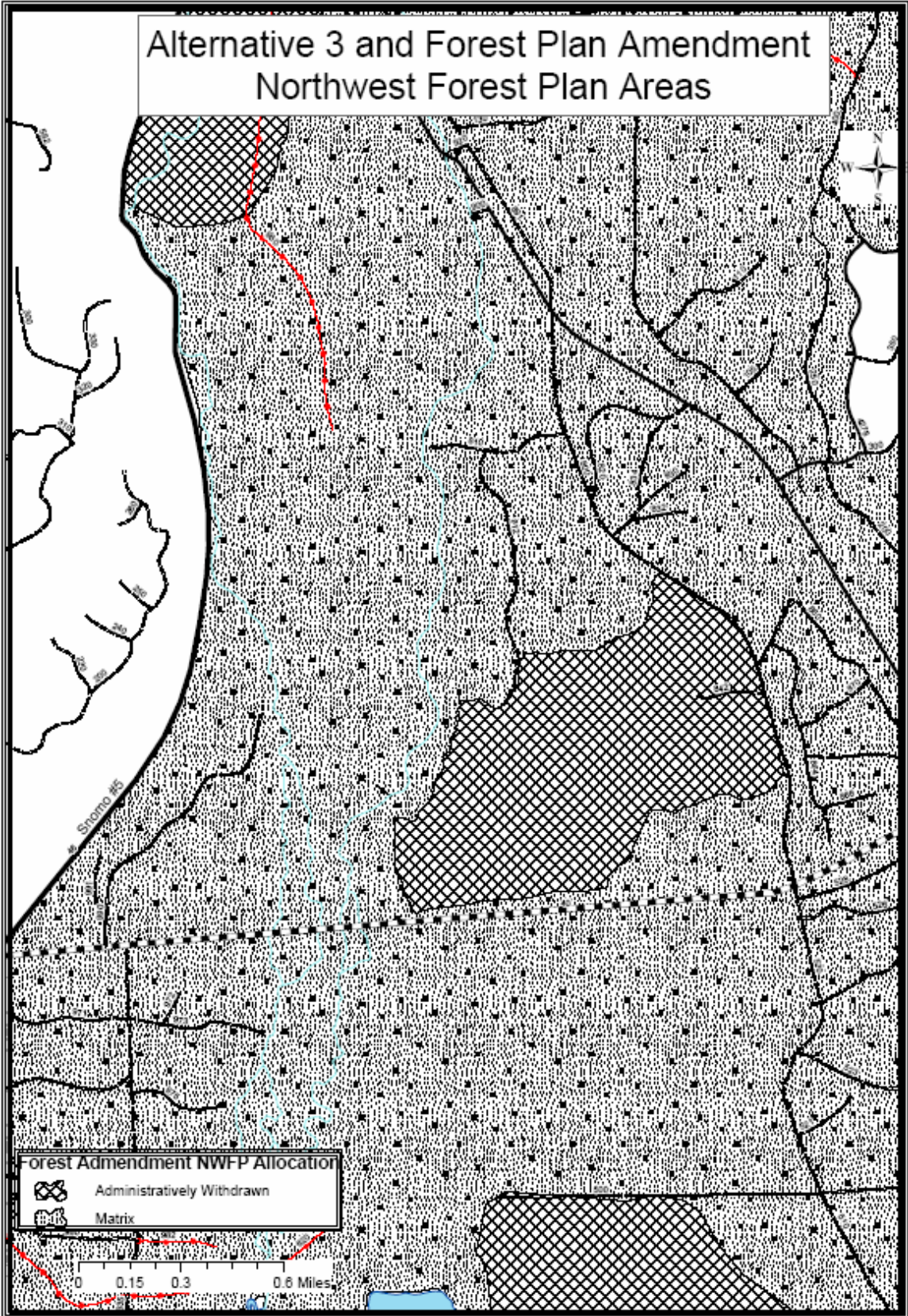
Map 5 Selected Alternative - Forest Plan Amendment Management Area



Map 6 Selected Alternative - Forest Plan Amendment Current NWFP Management Area



Map 7 Selected Alternative - Forest Plan Amendment NWFP Management Area



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